ASSEMBLY
AND
SERVICE MANUAL
FOR THE
Era Replica Automobiles
427 ROADSTER
Chassis 758 on

Revision 10b
6/08

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Updates/Addenda

We try to keep the manual current with the state of the kit, but there may be kit changes not already noted. If the error is significant, please drop me a note. Thanks for your patience.

Significant updates, corrections and supplements to the manual will be sent to you if required. Lesser partial updates and helpful hints will be posted to our web site at

www.erareplicas.com/427man/

The latest entire manual in PDF format is posted on the web.
Use the e-mail below for the location.

Thanks,
Bob Putnam -ERA-
e-mail: ***eracars@sbcglobal.net***

Please direct your parts inquiries to:
eraparts@sbcglobal.net

The Manual

The text and layout of this manual was done with MSWord 2000. Some of the illustrations were hand drawn and scanned, and some were done in DesignCad 2D and 3D. Images were translated to GIF and JPEG format, and linked to this file.

The Legal Stuff

Information in this manual is correct to the fullest extent of our abilities. Era Replica Automobiles assumes no liability for any direct, indirect, incidental or consequential damage resulting from the information within..

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*This manual is arranged by **assembly sequence,** not topic. For information on a specific topic - assembly or service, see the index.*

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SECTION A - PARTS NEEDED

READ ME FIRST

Congratulations on your selection of the E.R.A. 427SC! We at E.R.A. hope that assembling your kit will be a pleasant experience. We share your goal of creating a great automobile.

Our objective, when we started on the design and production of this kit was to create a Cobra replica better than all the rest. To keep quality consistently high, we have designed-in almost everything, making this kit one of the easiest to build.

Even though the E.R.A. 427SC kit is extremely complete, we realized that it is your labor that puts the final quality into the product that bears our name.

If you have problems, E.R.A. will help you as much as possible to complete your kit. After all, you are really an extension of our production line. And please, feel free to offer suggestions that might improve the end product or the process of construction.

***Remember**, the **E.R.A. 427SC Cobra replica** is usually a very good investment! Of course you are free to make "improvements" to the design but be aware. Changes from the original Cobra concept may not increase the value of your car, and may even decrease it. E.R.A. has spent many years perfecting the details of the 427SC.*

We would love to hear from you, but.... **Please**, if you have a problem, **use the index first**! We have tried to include all the information necessary for you to complete this project in a timely fashion.

Information on the parts required starts on page 8, parts preparation on page 32, and the actual process of assembling the kit begins on page 54.

Please insert any addenda before you start.

Some of our electrical equipment may vary, depending upon the supplier. Therefore, **the wiring instructions** are included with the wiring harness, not in this manual.

This manual is organized in the **assembly sequence** that E.R.A. normally uses with their turnkey cars, **not by subject**. You may change the sequence to your own preference - within reason. We prefer to install all the mechanical parts after the car is painted. That way, the mechanical bits stay clean, and it is easier for the painter to get any “hidden” areas.

Please use the **index** to find a specific topic.

Have fun!

SECTION A
PARTS NEEDED

This section describes the components necessary to complete your E.R.A. 427 SC, together with part numbers and sources. Normal wearing parts that may need replacement after use are also listed on page 148..

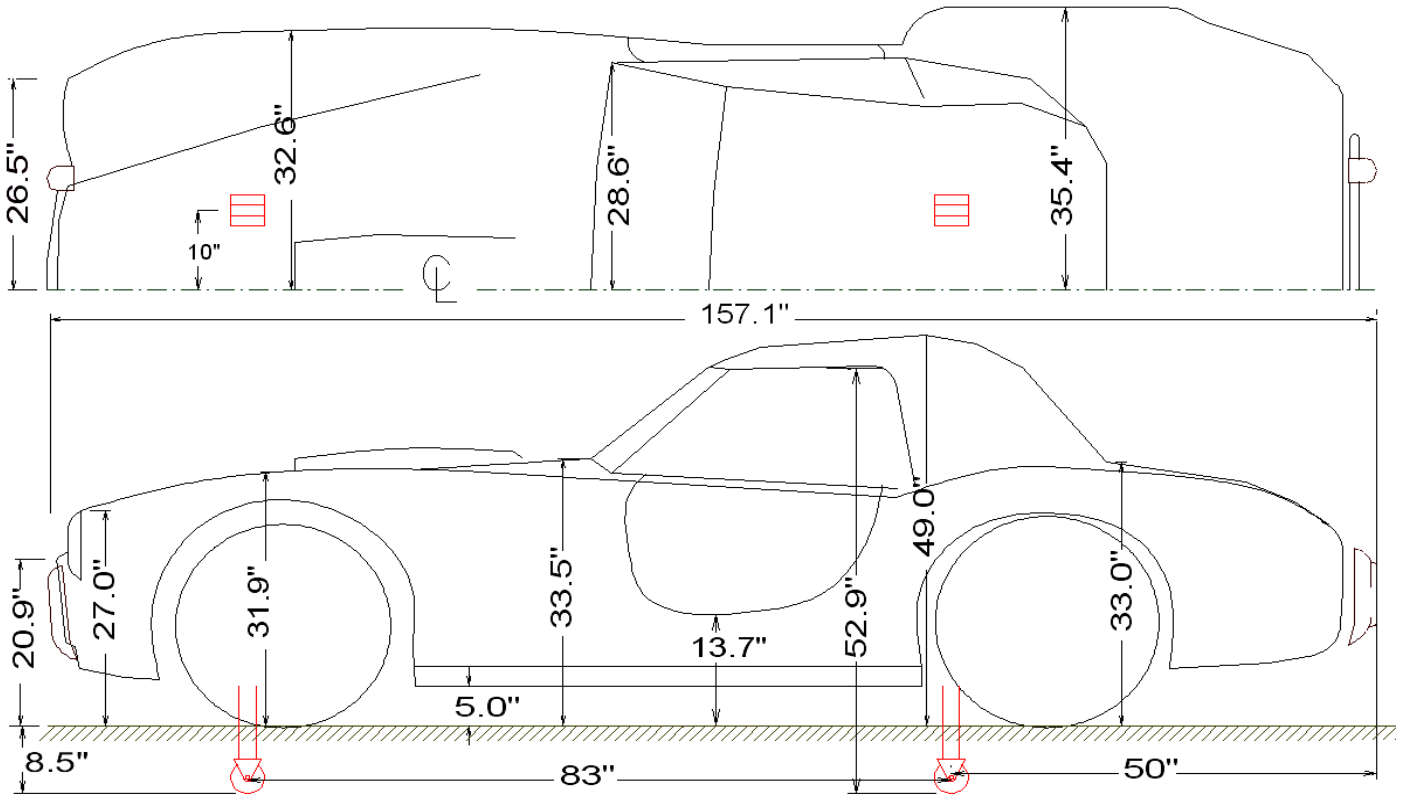
Read this section thoroughly before purchasing any parts. Don't waste your time and money on stuff you don't need or can't use.

PICKING UP YOUR KIT

The kit can be transported from our factory in an enclosed trailer, standard automobile trailer or rampback hauler. Shipping space for the parts in cartons will also be required, although most will fit inside the kit. We have used several shipping commercial companies with excellent results. See page 28 for names.

DIMENSIONS AND WEIGHTS

Weight: 800 lb. bare kit + 200 lb. of boxes + 600 lb. for roller



TRAILER REQUIREMENTS

If you didn't buy a "roller" from us, the kit is usually shipped on the dolly wheels that we use for assembly if your trailer is well sprung. The dolly wheels require a $300 **refundable** deposit. Many people keep the wheels until their kit is completed - it's very convenient for the kit to be mobile (and at a comfortable height) during construction.

The track of the Cobra dolly wheels is only about 20". Your trailer may require additional boards to support the dolly wheels. Without tires or dolly wheels, you can put tires as buffer between the chassis and the trailer. The kit will have to be lifted on and off the trailer manually. Have 3 strong friends to unload! If you're coming on a weekend to pick up your kit, please warn us if you aren't coming with extra people too. **Don't tie down the dolly wheels to secure the kit. Tie to the chassis or suspension.** In the absence of suspension pieces to tie to, wrap soft tie straps around the front crossmember and the upper mounting bolts for the rear subframe.

TIE-DOWNS

You or your shipping agent will require ratchet tie-downs, come-alongs and/or strong straps. We recommend either 4 diagonal connections or 2 longitudinal and 4 lateral ones for a total of 6. Don't forget that the **trailer must have anchor points to tie to**.

To avoid scratching the paint on the chassis, use 2" wide loops (or double 1" wide loops) or ratchet straps, 5000 lb. minimum rating. Make sure that your trailer has places to tie to. If you use chains or a come-along, bring padding or nylon straps for intermediate connections to the chassis.

INCLEMENT WEATHER:

A plastic cover will quickly shred at highway speeds. A high quality cloth car cover can be used to cover up the plastic, but it must be held down with rope all over. Looseness will allow any cover to quickly beat itself (and your paint job) to death.

SPECIAL NOTES

The **ERA 427SC chassis and body** follow the dimensions of the original Cobra very closely. Therefore, your mechanical components must conform to **similar space limitations** as the original car. Some configurations fit together better than others, and some cannot be done without major surgery.

Be careful when selecting and building your components. The information on the following pages shows the recommended parts for many possible drive-train combinations.

WHEN YOU BUY PARTS, KEEP THE RECIEPTS!

They are frequently necessary for inspection and/or registration

The following items are **critical** to the proper assembly of the E.R.A. 427SC. Details for selecting each component are listed in this section. Any special component preparations are detailed in Section B.

Engine
Engine accessories
Oil cooler system (optional)
Transmission - Ford 4-speed or automatic, Richmond Gear 5-speed
Transmission shift linkage and lever
Drive-shaft
Jaguar XKE or XJ Sedan rear drive/suspension unit
Hand brake lever and cable
Rack and pinion steering gear
Steering wheel, column and hub
Front brake rotors and calipers
Front coil -over shock absorbers
Exhaust system, side or under-car
Speedometer cable
Wheels and tires
Radiator expansion tank and hoses
Windshield wiper motor and drive components
Emblems
Spare tire
Jack and lug wrench (or knock-off hammer)

Remember! The more exotic you get, the more likely you are to have problems.
There is a maxim in engineering practice:

Keep It Simple, Stupid!

PLEASE! READ THE <u>ALL</u> THE INFORMATION THAT FOLLOWS BEFORE YOU PURCHASE PARTS THAT YOU MIGHT BE UNABLE TO USE.

ENGINE

Remember! All piston engines have a limited torque spread. If you decide to build a fire-breathing monster, expect to suffer at the lower RPMs. Because the E.R.A. 427SC is light, every hiccup is felt.

Very high octane gasoline is becoming scarce, and octane boosters can be a pain to deal with. If you're going to do a lot of street driving, use a conservative compression ratio: E.R.A. turnkey cars are usually built with 9.5:1 or 10:1, maximum.

COOLING

Always use a thermostat in your system for street use. If the engine fails to reach normal operating temperature, it may affect driveability and lubrication. In warm climates, a 165°F to 180°F thermostat works the best. Use a restrictor plate for racing conditions only.

The thermostat should be modified as shown on page 38.

EMISSIONS

Requirements vary from state to state. Most states require that your car meet the specifications of the year of your engine. Check with your local authorities. Side pipes with catalytic converters are available but we have no experience with them.

FORD FE SERIES

CID	Bore	Stroke	BHP net	Torque net lb-ft
390	4.05"	3.78"	320up	427
427	4.23"	3.78"	410 up	480
428	4.13"	3.98	325+	475

The original Cobra used the 427 CID "Side Oiler" engine in the first cars intended for competition. The remaining cars were equipped with a mix of 427s and 428 "Police Interceptor" engines. Both engines are logical for use in an "authentic" car. TheE.R.A. was designed around these engines.

The Ford FE series is not especially heavy, with the all-iron version weighing only slightly more than 600 lbs. We have seen complete engines with aluminum heads, intake manifold (w/ 2 x 4bbl carbs) and water pump scale at 522 lbs. Simply adding an aluminum intake will bring the weight on a stock 428 to 585 lbs.

The best engine depends on your driving style and your budget. If you are not experienced in the FE series engine, be wary of building your own "exotic" engine. The FE series is a bit quirky and you may make some very expensive mistakes. Before you buy anything, get a good Ford engine building book, available from Autobooks, etc.

Ford production of major 427 and 428 parts ceased in the 1980s. Fortunately, most FE engine parts are being reproduced. You can still find original 428 cores that were used in many full sized Fords. Using a vintage engine may have an advantage when registering your car. **When you buy parts, keep the receipts**. See *Inspection*, page 152.

In general, the **428** is much cheaper and easier to find than the 427. The later vintage 428 Cobra Jet (CJ) or 428 Super Cobra Jet (SCJ) engine is fine for all-around street use, offering from 325HP to 425HP with very good low RPM response and tractability. Most 428 cores can have their performance “updated” by the addition of new heads from Edelbrock and Shelby at reasonable cost. With an appropriate intake manifold and carburetor, a 428 will put out over 400 streetable bhp.

SECTION A -PARTS NEEDED-

The **427 "Side Oiler**" is the legendary Cobra engine. Its cross-bolted main bearings, improved oiling system and shorter stroke are modifications made for racing. It is more reliable above 5500 RPMs, with somewhat better high RPM power than the 428 (and a little less torque at low RPMs.) Many of our customers have built 427CID engines of more than 550BHP. We have found that the extra money spent on a 427CID engine will usually be returned in a higher resale value for the finished car.

The 427CID **Center Oiler** is now found mostly in boats. It lacks the exotic oiling system of the Side Oiler while retaining its bore and stroke. Since it was never found in the original Cobra, it lacks some internal authenticity, but it does *look* correct. There are a few problems associated with converting boat engines to car use. Many boat engines rotated in the reverse direction, with counter- camshafts, incorrect crankshaft sealing, and oddball distributors, among other things. Use caution.

A hybrid **454(+)CID** engine may be created by the use of a 428 crankshaft in a 427 block, using Chevrolet pistons and other special efforts. This is not an engine for the inexperienced to build, but it's great fun to drive, with good horsepower and flexibility.

Aluminum blocks are available from Carroll Shelby Enterprises, Genesis, Pond, and Dove Engineering. Shelby, Edlebrock and Dove make aluminum cylinder heads.

For the more adventurous, E.R.A. has modified footboxes and steering column to fit the **Ford 427 SOHC**. With its huge ports, this engine produces a lot of horsepower, but has poor low speed flexibility. Because of the width of the heads, there is a significant loss of **foot room**. Primary exhaust pipes must be custom made.

Alternately, you may also build **an economical variation** to the 427/428 FE using a 390 block. Externally, this engine is identical to the 427/428, and it accepts most of the same performance parts.

FLYWHEEL

The FE flywheel should use a ring gear with 184 teeth, not 153.

INTAKE MANIFOLD:

Low and medium-riser intake manifolds (including the Edlebrock Performer) can be used on the E.R.A. 427SC without modification.

The manifold may have to be tapped for the temperature gage fitting. See notes on page 32.

CARBURETORS

A single 4-barrel Holley carburetor will connect directly to the linkage supplied with the kit. Since the carburetors are turned 180° in the dual 4-barrel carburetor installation, you must either use the factory Ford linkage (which crosses the intake manifold between the carbs) or fabricate new linkage. All 4 bbl carburetors can be run **without chokes** with only slight driveability limitations. If the choke plate is removed, the choke housing should also be removed for extra clearance to the air cleaner. Street hoods (without scoop) require this extra clearance with some intake manifolds.

Inglese Induction (now part of Total Performance, Wallingford, Connecticut) has developed a 4 carburetor Weber 48IDA configuration for the FE block. While this really looks impressive, it takes a lot of tuning and a perfectly-set-up linkage for a minimal gain of power – not to mention being expensive.

FUEL PUMP

We use a heavy-duty mechanical fuel pumps (Carter M6905) on both 427 and 428 engines with no problems. If you don't need the extra capacity of an electric pump, avoid the complication and noise. (Wiring for an electric pump is built into the standard wiring harness.)

OIL FILTER

Any standard block mounted oil filter equivalent to the Motorcraft FL1 HP may be used. The same Ford part can be used on the remote filter supplied with the oil cooler with remote filter. The optional remote filter mount (usually integrated with an oil cooler) uses a Transdapt 1015 block adapter.

OIL PAN

There is a limited distance between the engine and the ground. Use a pan with a **maximum depth of 6.5 inches.** For more oil capacity, there are pans available that are wider. Canton and Aviaid make good designs. E.R.A. normally stocks Canton pans both in a high capacity street design and the Road Race design. Part numbers are on page 23. Some Aviaid pans have two additional fittings at the right front: A large tube that's intended to connect to a breather tank and a smaller tube that can be used for a dipstick. Plug them with metal if not used.

ALTERNATOR AND PULLEYS

ERA supplies the alternator mounting bracket to shift the alternator up and in from the original location. An adjusting bracket (to replace the stock one) is optional.

You may use a single groove pulley system for the crank, water pump and alternator. Aluminum pulleys from March Performance work well. For street use, we don't recommend underdriving either the alternator or water pump.

FORD 289/302/351

Pre-serpentine belt engines are easily adapted to the 427SC, although *primary* exhaust pipes must be specially fabricated. The chassis mounts are the same as for the FE block. You may retrofit the FE engine without modification, which comes in handy if you update later. E.R.A. supplies a special alternator adjusting bracket and clutch slave cylinder bracket.

Use the alternator as listed for the FE block (page 21). Install the alternator as shown.

If you have a late engine with a serpentine belt, it may be converted by changing the lower pulley, water pump and pump pulley. Preparation is on page 33.

OIL PAN

Maximim oil pan depth with the small block is 8". The sump should not extend past the front mounting flange.

OIL FILTER

If you are using an oil cooler and sandwich adapter with block-mounted filter, you must use a Fram PH16. "Equivalent" filters may not work. The Fram's shape is slightly different.

A 90 degree adapter (Ford M-6880-A50) **may** allow a larger filter but we have not had a chance to check fit.

FORD 429/460 CID

E.R.A. has engine mount pedestals, special foot-boxes and a steering column for the Wedge and Boss engines. This engine, even with the **narrow heads**, is considerably wider and somewhat taller than the FE. Consequently, the foot-boxes are made narrower, leaving you with reduced leg room. The **primary pipes** to fit this engine currently must be custom made, although we will try to have them for the Ford Power Products 460 soon. The standard hood scoop may have to be changed.

Use the lowest intake manifold available to eliminate the need for an extra-large hood scoop.

The **hemi-headed** Boss 429 is not recommended, due to its large size.

CHEVROLET

Engine mounts that fit both small and big block Chevrolet engines are available. While this seems like low-dollar horsepower, our experience has been that resale value is adversely affected. In the long term, this decision is a net financial loss.

The standard Ford side-pipes will be work, but custom primary pipes must be custom fabricated.

The 427/454 CID engine requires a special alternator (see page 21) and bracket which mounts the alternator at the bottom right of the block..

CLUTCH

No matter what engine, E.R.A. recommends using a **clutch** with stock pressure for street use. Because the car is very light, extra pressure is not necessary. Be careful to match the bolt pattern of your flywheel to the pressure plate. Ford has used several variations. E.R.A. has used standard pressure Brute Power replacements with good luck.

We have found that removing the weights from any centrifugally-assisted pressure plate prevents release problems without making the clutch less efficient.

FE Note: Small spline throw-out forks for the Ford FE bell-housing are no longer available from the dealer. Custom forks and pivots for all Ford transmissions are available from E.R.A..

BELLHOUSING

E.R.A. recommends a blow-shield type bell-housing such as the Lakewood 15210 (Ford FE). We trim the bottom flange so that is does not extend below the chassis. See page 35.

ALTERNATOR

To keep that original look, most engines in an E.R.A. are designed to use an old style Ford alternator with an external voltage regulator. 50-60 amps capacity is adequate. See page 21 for part numbers.

If you wish to use a later alternator with integral regulator, you must modify the wiring harness to use a 10 ohm resistor in a trigger wire from fuse 4.

Generally, a high amperage alternator is not necessary, but if you use one its output may excede the ammeter's capacity. A small shunt wire can be installed to increase the ammeter's capacity.

IGNITION NOTES

More details are included in the separate wiring instructions and at http://www.erareplicas.com/427man/index.htm.

Note! *If you are using the reproduction expansion tank, you must use a small-diameter distributor cap. Both MSD and Unilite have appropriate setups available.*

MSD SYSTEMS

Neither our current Smith tachometer (Caerbont) nor the Stewart Warner require an adapter, but some other Smith tachs may. Inquire. See page 80 for special **wiring routing notes** and the wiring instructions for hookup instructions.

UNILITE DISTRIBUTOR

Always use a **ballast resistor** with the Unilite system. Also, disconnect and tape the wire at the "I" terminal of the starter solenoid. Details are with the wiring instructions.

When combined with an **MSD** ignition system, a special resistor is required. Call Unilite for details.

TRANSMISSION

The original 427 Cobra used the Ford **Top Loader** transmission in both NASCAR (close ratio) and street (wide ratio) configurations. It was (and is) a great transmission, with excellent strength and good ratios. The disadvantage with the 4-speeds is that neither offers particularly good "turnpike cruising". Because of the high first gears, you are forced to use a 3:31 or 3:54 differential ratio. In this modern age, most of us are used to more relaxed cruising. Fortunately, there are now several other good 5-speed transmissions that can be used with small block and FE Ford engines, all of which will fit in an ERA without chassis changes.

Ford T5: Rated at only 300 lbft, this is only useful with a mild 302 engine. Overdrive 5th gear.

Tremec 3550, TKO and TKO II: The 3550 is good for tweaked 302s and mild 351 engines. The TKO can be used with mild 427s and 428s. Gear spread is very wide, making it a marginal performance box. The 3550 and TKO have a deep overdrive 5th gear, the TKO II has a tighter .82:1 5th gear.

Tremec 500 and 600: This is a new, stouter TKO, with a gear spread similar to the Richmond Gear 5-speed. Overdrive 5th gear. The .82:1 5th gear ratio is recommended for engines that don't run well below 2000 rpm. See further notes on page 13 and 34.

Richmond Gear 5-speed: A close gear spread with a 1:1 5th gear that requires a numerically low differential gear.

As a rule of thumb, if you do much stop-and-go driving, 10 MPH/1000 RPM is the longest 1st gear that can be driven smoothly with a fairly mild engine. This means that a wide ratio Top Loader will be OK with a 3.31:1 differential ratio, a close ratio Top Loader requires a 3.54:1 ratio. The Richmond Gear 5 speed is much more flexible, allowing a looong 2.88:1 differential. The T-5 and Tremec have an overdrive 5th and can coexist with a 3.31:1 and numerically higher ratio.

TRANSMISSION GEARING

(WITH 26" OD TIRE)

4-SPEED TOP LOADER, WIDE RATIO

	1st	2nd	3rd	4th
Ratios:	**2.78:1**	**1.93:1**	**1.36:1**	**1:1**
Dif.	**Speed@ 1000RPM**			
3.07	9.1	13.1	18.5	25.2
3.31	8.4	12.1	17.2	23.4
3.54	7.9	11.3	16.1	21.8

4-SPEED TOP LOADER, CLOSE RATIO

	1st	2nd	3rd	4th
Ratios:	**2.32:1**	**1.69:1**	**1.29:1**	**1:1**
Dif.	**Speed@ 1000RPM**			
3.07	10.9	14.9	19.5	25.2
3.31	10.1	13.8	18.1	23.4
3.54	9.4	12.9	16.9	21.8

T-5 5-SPEED

Some T-5's are geared like the Tremec 3550

	1st	2nd	3rd	4th	5th
Ratios:	**2.95:1**	**1.94:1**	**1.34:1**	**1:1**	**.63:1**
Dif.	**Speed@ 1000RPM**				
3.31:1	7.9	12.0	17.4	23.4	37.1
3.54:1	7.4	11.3	16.3	21.8	34.7

TREMEC 3550/TKO/500 5-SPEED

	1st	2nd	3rd	4th	5th
Ratios:	**3.27:1**	**1.98:1**	**1.34:1**	**1:1**	**.68:1**
Dif.	**Speed@ 1000RPM**				
3.31:1	7.1	11.8	17.4	23.4	34.4
3.54:1	6.7	11.0	16.3	21.8	32.1

TREMEC TKO II 5-SPEED

	1st	**2nd**	**3rd**	**4th**	**5th**
	3.27:1	**1.98:1**	**1.34:1**	**1:1**	**.83:1**
Dif.	**Speed @ 1000rpm**				
3.07:1	7.7	12.7	18.8	25.2	30.4
3.31:1	7.1	11.8	17.4	23.4	28.2
3.54:1	6.7	11.0	16.3	21.8	26.3

TREMEC 600

	1st	2nd	3rd	4th	5th	Alt 5th
Ratios	**2.87**	**1.89**	**1.28**	**1:1**	**.82:1**	**.64:1**
DIF:	**Speed@ 1000RPM**					
3.07:1	8.8	13.3	19.7	25.2	30.7	39.4
3.31:1	8.1	12.4	18.3	23.4	28.5	36.5
3.54:1	7.6	11.6	17.1	21.8	26.6	34.1

RICHMOND GEAR 5-SPEED RATIOS

	1st	2nd	3rd	4th	5th
Ratios:	**3.27:1**	**2.13:1**	**1.57:1**	**1.23:1**	**1:1**
DIF:	**Speed@ 1000RPM**				
2.88:1	8.2	12.6	17.1	21.8	26.9
3.07:1	7.7	11.8	16.0	20.5	25.2
3.31:1	7.1	11.0	14.9	19.0	23.4

FOUR SPEED TOP LOADER

Rebuilt transmissions are available. See the list of resources or ask E.R.A.

Transmissions come in several combinations of long and short tail-shafts, with large and small splined input and output shafts. Unless you expect to subject the drive-train to extremely severe loads (drag racing tires) it is not necessary to use the large spline input shaft. We recommend a **short tail-shaft** case, 24" from the mounting flange to the end of the tail-shaft housing. This will enable a longer drive shaft.

SPECIFICATIONS AND APPLICATIONS:

Most Ford cars from 1964 to 1973 used the Top-loader. However, in 1964 and 1965 the transmission had a four-hole mounting face and a 25-spline output shaft. This early transmission should be avoided. Drive-shaft parts are unobtainable.

From mid 1965 to 1973, Ford changed to a universal eight-hole front mounting pattern. Also during this time, the output shaft was upgraded to a larger 28-spline output shaft for the 200 to 390 cubic inch engines and 31-spline shaft for the 427, 428, and 429 engines. Because the E.R.A. 427SC is very light, stress on the transmission is low. We have found that the small input and output shafts are fine for street use.

Input shafts were also upgraded to 1 1/16" diameter for use with 200 to 390 cubic inch engines and 1 3/8" diameter for HD 427, 428, and 429 engines. The larger spline size was only available with close ratio gears.

The Top-loader gearbox was built in three case lengths measured from the mounting flange to the end of the tail-shaft housing: 24", 25.5" and 27"**. If at all possible use the short tail-shaft transmission**. It allows a longer driveshaft.

If your differential ratio is 3.31:1 or taller, consider the wide ratio transmission. It will allow easier starts.

SPEEDOMETER DRIVE GEARS

Most Top-loader transmissions come with a right-hand thread drive gear on the output shaft. The driven gear on the speedometer cable must match. See page 14 for part numbers.

CLUTCH THROW-OUT FORK

Part numbers are on page 25.

MOUNTS

There are 3 common bolt-hole configurations for the rear transmission mount:

- Two holes in the transmission, arranged front to back: Use Ford C8ZZ-6068A or its equivalents, i.e. Republic or Parts Master 31-2284
- Two holes arranged side to side, and having 5 5/8" between centers. Same mount as above.
- Two holes arranged side to side, and with 6 1/4" center to center distance. This very rare transmission requires **chassis modifications (**done on special order only.) Use Ford C9AZ-6080E, Republic 31-2250 or equivalent.

FORD C-6 AUTOMATIC

Use the C-6 appropriate to your engine. Because there isn't a transmission oil cooler built into the radiator, you must fit an auxiliary one, either in place of the engine oil cooler or in front of the radiator.

Mount: Ford C9AZ-6068H, Republic 31-2375 or equivalent

RICHMOND GEAR (DOUG NASH) 5 SPEED.

This transmission is loosely based on Chevrolet gears. The 5 speed has a direct (1:1) fifth speed. First and second gears are shorter than the Ford 4 speed so you may numerically lower your differential ratio without fear of bogging down in first gear. See the chart of speed in gears on page 12 for particulars. The R.G. 6 speed is too big to fit without major modifications.

There is also a **competition version** of the 5 speed, using straight cut gears and no synchromesh. Bulletproof for competition, but *very noisy for street use*.

Rear Mount: GM 3870184, Republic 31-2224

Pressure plate: Standard Ford

Clutch disc: Ram 4148 (11" x 1 1/8-26 spl)

Clutch throw-out bearing, arm:

- Same as small spline top-loader

Speedometer drive parts (see page 14 for gear #):

• Cable	Champ 400020
• Gear Holder (Bullet)	GM 345215
• Retainer	3708148
• O Ring	GM 10054241
• 90 deg. adapter	AA1052

Gear 39879XX (XX=No. of Teeth)

See driven-gear part numbers on page 14.

FORD MUSTANG T-5

This 5-speed transmission and its Tremec variations can be used with the smaller Ford engines. Its **overdrive** 5th gear gives excellent highway cruising, even with a 3.77:1 differential ratio. Don't expect high top speeds in 5th gear, however. The small block engine may not have the torque to exceed 4000RPM in 5th. Because the shift linkage is integral, the shifter cannot duplicate the original orientation. A special **clutch release system** is required.

TREMEC 3550, TKO AND 500/600

Some Tremec transmissions require a **Chevy splined driven disc**, some use a Ford spline. The pressure plate can be standard Ford. A McLeod spacer (8607) between the bell housing and transmission may be required with FE engines unless the transmission is equipped with a special short input shaft (available from Fortes Parts Connection), A portion of the case must be removed for clearance. See page 34. The TKO mount requires an **adapter plate** used with a Chevy mount. See page 25 for part numbers.

Before you install the speedometer driven gear, **check that its spiral meshes properly with the drive gear.** Transmissions have come through with both the LH and RH drive gears. See page 14 for calculations and page 14 for part numbers.

SPEEDOMETER DRIVE GEARS

Ford transmissions used a **variety** of drive gears. The **Mustangs Unlimited** catalog is a good reference. The gears are illustrated and detail specifications listed.

*Note! The Ford Top-Loader **drive gear** may come with **right or left hand threads**. The driven gear must match.*

You can calculate the number of teeth on the speedometer drive gears (**part #s on page 25**) using the formula:

$$\frac{\text{(Dif. Ratio) x (Tire revs/mile) x (Teeth on drive gear)}}{\text{(Speedometer revolutions/mile)}} = \text{(Teeth on driven gear)}$$

A 295-50-15 tire rolls 760 revs per mile. Both the Stewart Warner and Smiths speedometers are usually geared at 1000 revolutions/mile.

Usually the **Ford Top-Loader, T-5** use a 7 tooth driving gear requiring a **LH driven gear**. Teeth = (Dif.Ratio) x 5.3.

Usually the **Tremec** uses a 7 tooth driving gear requiring a **RH driven gear**. So: Teeth = (Dif.Ratio) x 5.3.

The **Richmond Gear** transmission uses an 8 tooth driving gear. So: Teeth = (Dif. Ratio) x 6.06. See page 13 for gear selection.

DRIVEN GEAR SELECTION AND PART NUMBERS

Ford Top-loader, T-5 and Tremec				Richmond Gear 5 Speed		
Diff. Ratio	**App. Teeth**	**Toploader/T-5 Left-hand**	**Tremec Right-hand**	**Diff. Ratio**	**App. Teeth**	**Part Number**
				2.88:1	18	3987918 (Brown)
3.07:1	16	Orange tip	Burgundy	3.07:1	19	3987919 (White)
	17	C2DZ-17271G (Purple tip)	C3DZ-17271C (White)	3.31:1	20 21	3987920 (Blue) 3987921 (Red)
3.31:1	18	C2DZ-17271K (Green tip)	C0DD-17271B (Yellow)	3.54:1	22	3987922 (Gray)
3.54:1	19	C4DZ-17271A Pink tip	C0DZ-17271B (Pink)			
3.77:1	20	C2DZ-17271H Blue tip	C1DZ-17271A (Black) C8SZ-17271A (Orange)			
		Retainer for all	C1DZ-17292A			

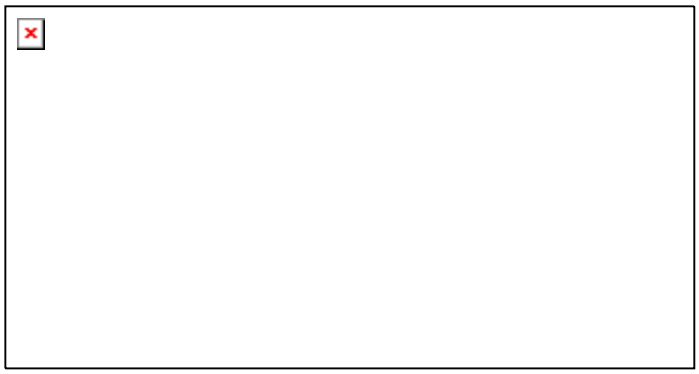
SHIFT LINKAGE

All shift linkage (modified Hurst) is available from E.R.A.

TOP LOADER

SHIFT LINKAGE

Both the original Ford 4-speed shift linkage and Hurst linkage (391-3180) work well. Some modifications to the rod link lengths will be necessary to move the lever back to the original position. If your transmission does not have the shifter mounting bosses in the correct position, adapters are available from E.R.A. See page 48 for shift lever placement.



LEVER

If you don't want to modify the Mustang lever yourself (see page 47), E.R.A. manufactures a duplicate the original shift lever to fit the Top-Loader (with stock or Hurst linkages) or Richmond gear transmissions with the Long shifter.

TOP-LOADER

Originally, AC modified the 1965-66 Mustang shift lever by turning the handle about 180 degrees on its mount. This placed the lever forward. While it looked a bit strange, it worked quite well.

On the short tail-shaft transmission, the shifter mounting bracket should be mounted within the last couple of inches of the tailstock end. This places the shift lever in the same spot as on the original Cobra. If your transmission locates the bracket further forward, an E.R.A. adapter plate can be used to move the shifter back.

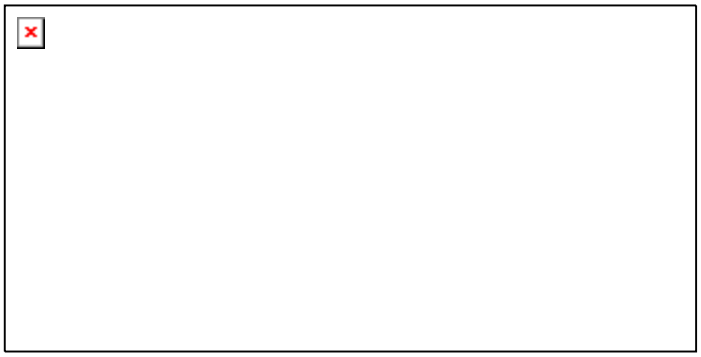
RICHMOND GEAR

E.R.A. modifies a Long shifter and rods for the 5 speed, using the Ford reversed lever for control. The lockout "T" handle is there, but no longer is functional. Inquire about available parts.

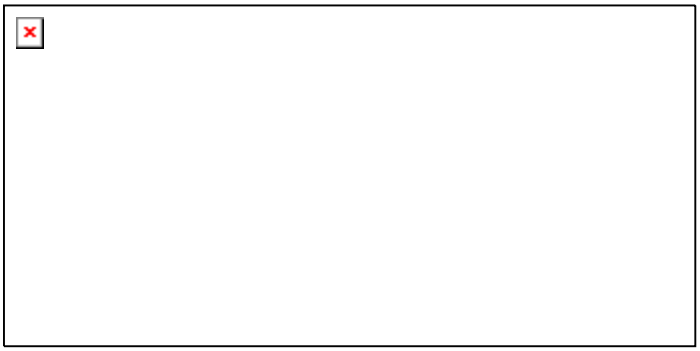
TREMEC

The lever bolts to the transmission’s stub. Ask about available “original look” levers.

REAR DRIVE/SUSPENSION ASSEMBLY



Jaguar-based Suspension



Custom ERA Rear Suspension

The **E.R.A. 427SC** is designed to use either the **Jaguar** rear suspension (in an E.R.A. subframe) or a custom **E.R.A. suspension unit** with outboard brakes. The E.R.A. unit is available as a kit with with all our conversion parts ready for your differential and brake parts, or as a complete assembly. See page 43 for details.

JAG PARTS SELECTION

*See page 23 for **application** list.*

The Jaguar differential is the same Salisbury unit that was used in the original Cobra with only some casting changes. It is adequate for 500+ BHP, and can be made even stronger by using stub axle parts from Concours West. Gears wear is not normally a problem even in well-used assemblies, but <u>always</u> replace seals.

The vintage of the Jaguar differential is punched in the casting at the lower right corner of the cover. The top number is the year, the bottom number is a special code. (Translation: we don't know what it's used for). A simple way to determine whether a post-1980 unit will work is the presents of inboard brakes. The later (inappropriate) assemblies have brakes mounted on the hub carriers.

When selecting and buying a used rear end, look for:

- **Completeness** - You don't need the Jag trailing arms, but you do need everything else.
- **Limited Slip Differential** - Many XJ differentials were open. A new limited slip may be retrofitted for about $700.
- **Brakes** - Try to get serviceable hydraulic and emergency brakes. There were no major changes in XKE rear brake until 1968 when both the calipers and rotors were updated. The later units are cheaper and easier to rebuild than the early units.
- **Gear ratio** - There should be a tag on one of the rear cover bolts (for example, 43/13 on the tag = 3.31 ratio). If there is no tag, mark the input shaft flange and the half-shaft or brake disc for reference and rotate the axles by turning the input shaft. For every time the axles and brake disc turns over once, the input flange should rotate approximately 3 ⅓ turns (3.31:1 ratio) or 3 ½ times (3.54:1 ratio). See the chart on page 12 for the best ratio for your engine/transmission combination.
- **Dampers** (coil-over shocks): All E.R.A. rear suspensions require 4 dampers and coil springs (coil over shock absorbers). Specifications are the same as for stock Series II Jaguar XKE. **XJ dampers cannot be used**. See page 23 for part numbers and page 53 for length specifications. Dampers with adjustable spring seats and externally adjustable damping are available from E.R.A.

USING THE E.R.A./JAG SUBFRAME:

The stock Jaguar XJ control arms and half-shafts will be **exchanged** for shortened pieces when you buy the subframe from us. Series II XKE parts will not have to be modified, although Series III parts will.

All XKE lower control arm mounting brackets (that bolt to the sides of the differential) must be exchanged for XJ units.

All mounting bushings and hardware are included with the E.R.A. subframe.

Do NOT replace the control arm roller and needle bearings with aftermarket urethane bushings! The net result will be wheel hop and generally sloppy handling.

*The E.R.A. subframe requires **XKE style** coil-over dampers. While not necessary, special **height** and **damping**-adjustable units are available from E.R.A. Springs can be changed to ones of higher rate. See page 53.*

STEERING GEAR

Starting with chassis 759, the car requires a Flaming River gear, FR1502-3x3, with modified tie-rod adapters. This is similar to a Mustang II unit, but shortened by 3". Modifications are shown on page , and complete units are available from ERA.

FRONT ROTORS AND CALIPERS

WITH BOLT-ON WHEELS

Most mid-sized GM cars from 1970-1978 used the correct pieces, with 2 ⅜" piston calipers. *Station wagons may use different parts*. Chevrolet lists the same rotor and calipers for all sedans.

Before purchasing the rotors and bearings, measure the size of the outer wheel bearings. Your rotor and bearings must be compatible with the smaller (more common) diameter (.655) at the outer end. The wagons used a .750" diameter spindle.

WITH PIN DRIVE WHEELS:

The E.R.A. pin-drive wheel conversion includes the hub and rotor, both compatible with the caliper and bearings listed above.

OPTIONAL COMPETITION BRAKES

E.R.A. offers a conversion to 12 1/8" (by 1 1/4" wide) rotors and fixed 4 piston calipers for heavy duty street or track use. These require modifications to the steering knuckle.

DRIVE SHAFT

E.R.A. has drive-shafts for most applications in stock.

This is a project for a shop specializing in power - transmission equipment or shafting. See page 49 for design details.

OIL COOLER SYSTEM

The **optional** E.R.A. oil cooler and adapter system comes with or without a **remote oil filter**. Layouts for both configurations are shown on page 90.

The remote oil filter is a reproduction of the original race option and mounts on the front of the block.

If you decide to build your own system, the specifications below may be helpful but should not substitute for good design practices.

- **Oil cooler** - approximately 13" x 4"h or 6"h with AN 10 male fittings. (The 6"h unit requires a special aluminum housing (included in the ERA option).)
- #10 stainless **braided hose** -
- Oil cooler **adapter** or block-off plate- bolts to the block or oil filter housing.

STEERING COLUMN (UPPER)

You may use a **Triumph** unit (see page 50) as described below **or** the custom **E.R.A. reproduction column**. The E.R.A. column includes the hub and requires no preparation.

TRIUMPH COLUMN

The preferred parts are from a Spitfire or GT-6, vintage 1972 to mid 1977. Get the upper column and housing, upper and lower clamps and both switches.

See page 50 for bushing remove and replacement, preparation and rebuilding of the Triumph column.

STEERING WHEEL

The original Cobra used a 16" laminated wood rimmed aluminum-framed steering wheel. We have found that a 15" wheel allows more knuckle room between the wheel and the cowl, while still offering reasonable steering effort.

E.R.A. offers both diameters in a reproduction of the original wheel. A hub center button with either a AC or Cobra logo is also available.

If you are using a Triumph column, you also need to adapt the Triumph hub to the reproduction wheel.

SEAT BELTS

E.R.A. offers custom competition belts, identical to the original cars. Inquire.

Standard seat belts can be installed in the threaded chassis bosses.

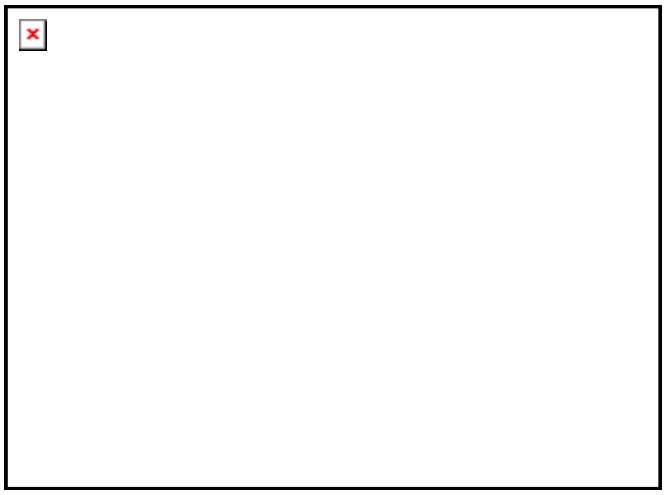
Separate left and right straps are required for dual shoulder harnesses. The length of an off-the-shelf shoulder harness strap may need changing.

WIPER MOTOR AND COMPONENTS

Modified and rebuilt wiper motors and hardware are available from E.R.A.

The best wiper components are found in the 1969-1976 Triumph Spitfire, GT-6, or TR-6. Get the entire set-up including: wiper motor, wheel boxes, spacers, gaskets, chrome bezels, and the connecting tube between the wiper motor and right wheel box. See the wiper motor illustrations on page 50 to help you identify the parts.

Many times, the wheel-boxes available are not correct. Measure across the teeth of your gear to the theoretical center of the cable. (Some of the gears are flat, some are concave.) If your dimension "A" is 1.45", not 1.25", the wiper drive must be modified to compensate. See page 50 for details.



a\whlbox

FRONT SHOCK ABSORBERS

E.R.A. offers custom made Spax dampers with springs. Konis are available on special order. Also available are spring collar wrenches to adjust your ride height.

The coil-over dampers should be adjustable for ride height. See the length specifications on page 53 and part numbers on page 23.

Both Koni and Spax are adjustable for damping. The Spax is externally adjustable for combined jounce and rebound damping. The Koni has separate external damping adjustments for jounce and rebound.

FRONT COIL SPRINGS:

Front Spax and Koni dampers require 12" long by 250 lb/inch or 275 lb/inch springs for most engines. Other dampers may require a different spring length. Some spring/shock combinations may require spacers. Check with us for details.

EXHAUST SYSTEM

SIDE PIPES

Side pipes were used on the original competition cars and are very popular on the 427SC. However, because we **have lengthened the footboxes** for more leg room, exact duplicates of the primary pipes will not fit. Primary pipes for the Ford FE engines are available from E.R.A.

Exact reproductions of the original side pipes, and the appropriate primary pipes are available from E.R.A. in various coatings and materials, including polished stainless steel.

UNDER-CAR EXHAUST

The E.R.A. 427SC has provisions for an original style under-car system. This is a mellower, dual exhaust system for those wishing to duplicate an original street car. There is a small horsepower penalty, however. A complete system for the FE engine is available from E.R.A. The system is shown on page 132.

WHEELS, BOLT-ON

Bolt-on wheels require a 4 3/4" bolt circle (Chevrolet pattern). 7" wide wheels for the front, 8 1/2" or 10" rear with 3 5/16"back spacing will result in the "right look." Using wider wheels on the rear requires a change in the wheel offset and may prevent use of the under-car exhaust system.

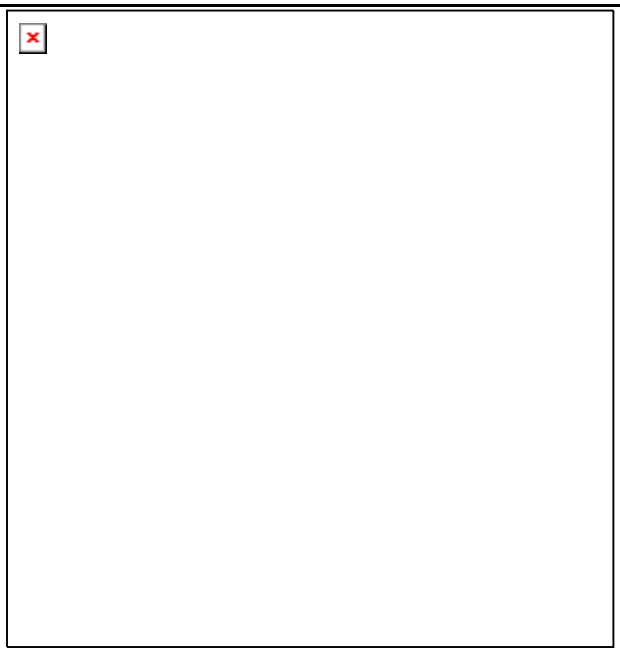
Custom bolt-on wheels will fit with the same offsets as the pin-drive wheels shown here. If your wheel and/or tire widths are significantly different, call us for advice.

Note! The front GM hubs use 7/16"-20 lug nuts, the rear Jaguar hubs have 1/2"-20 thread.

Definitions:

BACKSPACING *- The distance from the inside edge of the wheel to the mounting face*

OFFSET *- The distance from the centerline of the wheel to the mounting face.* ***Positive*** *offset is where the wheel centerline is* ***outside*** *the mounting face.* ***Negative*** *offset moves the wheel* ***in*** *toward the center of the car. (Some wheel companies may define the offset differently. Check!).*



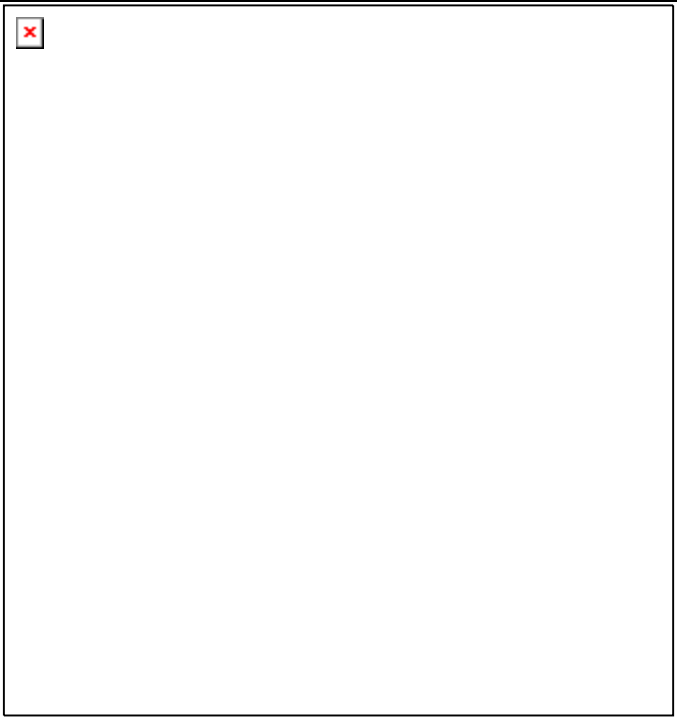
Rear Wheel Offset

See page 138 for special notes.

WHEELS, PIN-DRIVE

Six-Pin (as original) 15" wheels (7 1/2" and 9 1/2" wide are available from E.R.A., Trigo and Halibrand. The front E.R.A. hubs require non-original backspacing. Several manufacturers (PS Engineering and Vintage wheels, among others) make 17" wheels that are up to 9.5" wide front, 11.5" rear.

"**Five-Pin**" pin drive wheels are also available from E.R.A., Trigo and Halibrand. These wheels look exact from the outside, but use bolt-on hubs with adapters and special lug nuts to drive the wheels.



Front Wheel Offset

Note t hat if you machine the back side of the wheel for fit, you must maintain the pin hole depth.

TIRES

(rim size appropriate for tires)

Diameter	Front	Rear
Max.	26.3"	27.0"
Min.	24.5"	25.5"
Max. Width	275mm	335mm

The original Cobra used 8.15 x 15 tires on the Sunburst street wheels (7½" wide front and rear). 9.90x15 and 11.90 x 15 were used on the original Halibrand "GT40"wheels (7½" front, 9½" rear). These were pre-50, 60 and 70 series tires with a different profile than contemporary tires. A **spreadsheet** of tire sizes is posted on the ERA web site at http://www.erareplicas.com/427man/.

Lower profile tires increase the clearance between the top of the tire and the fender, giving the illusion that the car is higher than it actually is. If the car is lowered to compensate, the ground clearance will be reduced somewhat. In most of the pictures you have seen of our car, the tires used were B.F. Goodrich radial T/A's, sizes 265-50 x 15 or 235-60 x 15 front and 295-50 x 15 in the rear. Inquire about current tires that fit properly.

For Reference: $^{Revolutions}/_{Mile} = ^{20168}/_{(Tire\ OD\ in\ inches)}$

Some people like the look of the Goodyear Sports Car Specials, which are a vintage race tire. The proper sizes are 26.5 x 8.0-15 and 26.5 x 10-15, front and rear. These tires are **not legal** for street use in many states. They also tend to pick up and throw rocks, and flat-spot after being parked. Their sidewalls are also very thin and intolerant of curb parking. We don't recommend them.

Avon CR66ZZ tires are available in 15" sizes now, and have gotten rave reviews. They are the only streetable 15" tires that are V speed rated.

For 17" wheels, tires in 35 and 40 series will fit. Ask for current recommendations.

*Before mounting on **pin-drive wheels**, see page 138.*

SPARE

With bolt-on wheels, you may use a "Space Saver" spare tire as used on Camaros and other GM models. If you buy the tire with the wheel, make sure it has uses the 4 ¾" bolt pattern. This unit gives an increase in trunk room and mounts very nicely on the upper trunk shelf between the hinges.

RADIATOR HOSES

The 427SC requires several standard molded hoses, depending on your equipment. FE and small block hoses are listed on page 24. In some configurations, the hoses must be trimmed to length. See page 39. Installation layout is on page 144.

If you are using the steel upper **connecting tube**, your radiator must have a special top fitting. Specify when you order your kit.

Hhose kits are available from E.R.A.

EXPANSION TANK

FE ENGINE

New reproduction tanks are available from E.R.A.

The used expansion tanks that are commonly available (see page 24) must be modified because the outlet faces the wrong way. Unfortunately, most of the original tanks are fatigued badly and frequently develop stress cracks and pinholes. Most tanks are also too high, and must be shortened. If you wish to modify an old piece, see below and page 38 for details.

FORD SMALL BLOCK

A Harrison tank can be modified for use. Inquire.

JACK, ETC.

A screw or hydraulic scissors jack (available from E.R.A.) works well for wheel changing, etc. Don't skimp on quality.

With pin drive wheels, use a lead or plastic "dead blow" hammer to remove the aluminum knock-off wing nuts. Removing them with a steel hammer will mar the wing nut edges.

Hydraulic jacks, knock-off hammers, safety wire pliers and other tools are available from E.R.A.

PART NUMBERS AND SOURCES

Source addresses, etc. are found on page 27.

PART	PART NUMBER	SOURCE
Alternator		
Ford Small Block, FE and 429	Delco 321-147 (rebuilt) or any '70's Ford with separate regulator. A 100A unit is not necessary but will fit: Delco 334-2000 ('83 Ford Crown Vic Commercial/Police	Most Fords, 1971-1980
Ford SOHC	Lucas A8806 (85-89 Chev. Sprint)	GM, aftermarket
Chevrolet 283/350	Chevy w/integral regulator	
Chevrolet 427/454	Same as Ford SOHC	
Alternator Adjusting Bracket		
FE Ford	C6AZ-10145-B	E.R.A.
Small block Ford	Comes with kit	
Fan belt 289/302 Ford	Gates 7450 XL(most app's)	
351 Ford		
FE Ford	Gates 7445 XL (most pulleys)	
Ballast resistor	Nieh FF-109 / Borg RU-6 / SMP RU-4 / Wells F795	Aftermarket
Brakes, Bearings, Front		
Brake Rotor/Hub (bolt-on wheels)	GM 334348	GM dealer or many (Front)
	Bendix 141040	GM cars 1970-78 (see page 16)
Brake Calipers (Front)	GM 18002421, 18003761	GM dealer
	Rebuilts: Bendix L55001, L55002 (Includes pads)	Local parts place
Pads	Bendix D52S or equivalent (Semi-metallic for street use)	
Mounting pin kit		
Banjo bolt	GM 487293	
Brake reservoir, standard	BMW 3432 1 112 399	E.R.A., BMW dealer
Optional (3) cans		E.R.A.
Bearings-Front Wheel		
Outer	Bower/BCA A-6 or Timken LM11910/LM11949	GM or local auto parts
Inner	Bower/BCA A-2 or Timken LM67010/LM67048	"
Seal, inner	GM 3966202, National 8871	"
Spindle nut	GM 387137	"
Spindle washer	GM 457707	"
Battery, front mount	Group 47 **(Must have hold-downs on both ends)**	
Trunk mount (optional)	Optima SC34 (See erareplicas.com/427man/ for installation details.	

Bell-housing	**FE (390/427/428):** Lakewood 15210 for. **Ford small block:** Lakewood 15200: Top-loader, Richmond Gear, TKO with short input shaft Lakewood 15202: Tremec (May need **spacer**. See page 13) Lakewood 15203: T-5 ***See mod's necessary on page 35.***	Various, E.R.A.
Clutch arm *pivot*, FE	Ford C8AZ-7522B (Small spline T.L. part must be custom	Dealer, E.R.A.
Cables, Battery, Front Mount		
Engine ground to battery	16" long, eye/terminal clamp	E.R.A., parts supplier
Battery to starter solenoid	32" long, eye/terminal clamp	
Starter solenoid to starter	24" long, eye/eye	
Rear Battery Cables Engine/Trans ground Battery ground Battery to starter solenoid ***With cutoff switch*** Battery to switch Switch to starter solenoid		
Cooling system	See “Radiator Hoses” on page 24	
Dampers, Springs, Front		
Coil Spring	12" x 250 lbs/in (For Spax)	E.R.A., AFFCO, Eibach
Damper	Spax G135 PAS 200 Koni 8212-1126SPA1 (Double external damping adjustment w/aluminum body)	E.R.A. Special order only
Dampers, Springs, Jag rear		
Coil Spring with ht. adjst Spax	10" x 350 lbs/in 8" x 350 lbs/in	E.R.A., AFFCO, Eibach
Damper, w/o ht adjst w/ height adjustment	Spax S200/415 (Externally adjustable damping) Spax G640 S200	E.R.A.(Std XKE Ser.2)
ERA rear		
Coil spring	9” x 400 lbs/in (Must be 2.25” ID)	
Damper, w/height adj	Spax G297	
Drive Shaft Components	(see page 49 for parts reference)	

SECTION A -PARTS NEEDED-

ENGINES AND ENGINE PARTS	Complete rebuilt Ford units are available from several suppliers	Ask us
Mounts	C9LY-6038-A, C9LY-6038-B ('69 Mercury) 31-3058 (L), 31-3059 (R) Republic	Ford Dealer
429/460		
Ford 427, 428	63-64 Ford w/390-428 cid, Ford C3AZ-6038A,B Republic 31-2222 (right), 31-2223 (left)	E.R.A. or local parts
Ford 260, 289, 302, 351	63-65 Mustang w/260-289 cid, Ford C4DZ-6038A,B Republic 31-2221 (right), 31-2220 (left) MityMount (HD) FM132	
Oil Pan, Extra Capacity	Windage trays are recommended for constant running at high rpm.	E.R.A., Canton Racing Products
FE	High capacity front sump - Canton 15-810 , pickup 15-811	
	Road race (with trap doors) – Canton 15-820, pickup 15-821	
289-302	High capacity front sump – Canton 15-610 and pickup 15-611	
	Road race (with trap doors) – Canton 15-630 and pickup 15-611	
351W	High capacity front sump – Canton 15-660 and pickup 15-661	
	Road race (with trap doors)– Canton 15-680 and pickup 15-611	
351 Cleveland	Canton 15-710 pan, 15-711 pickup	
Exhaust System	Under-car-complete	E.R.A.
	Side pipes w/primaries:	E.R.A.
Emblems	Original type, front, rear and side	E.R.A., Cobra Restorers
Fuel Filter	In-line between tank and steel line on chassis (3/8")	local auto parts store
Hand Brake Lever	Jaguar XKE Series I - II(1961-1970)	Jaguar Dealer
or	E.R.A. Reproduction Lever	E.R.A.
Hand Brake Lever Cable	Custom for E.R.A. subframe	E.R.A.
Heater Hoses	Gates 28472 or equivalent (must be trimmed)	
Horn Button, (dash mounted)	Lucas 31872 (Jag XKE 1961-64 starter button)	Jaguar, E.R.A., Lucas supplier
SUSPENSION, REAR		
Jaguar Rear Suspension Assembly	1964-1974 Jaguar XKE, Series 2, 1965-1983 Jaguar XJ-6	Wrecking yard or E.R.A.
Sub-frame	Custom E.R.A.	E.R.A.
Rebuilding Parts for rear suspension	bearings, brake parts, etc., see page 148	SICP, E.R.A., Jag Dealer
Differential/LSD rebuilding	Various ratios of Dana 44 gears	Michigan Driveline
Steering gear	Modified Flaming River, FR1502-3X3 See page for modifications.	E.R.A., Flaming River

Radiator hoses, FE engine	See trimming instructions on page 39, layout on page 144.	
Upper w/o connecting tube	Gates 20819	Local auto part supplier
Upper, w/connecting tube	Gates 21236 or equivalent	
	and 1-3/4" ID x 4-1/2"L straight	
Lower, cast iron water pump	Gates 21047 or equivalent	
Lower, aluminum pump	Goodyear 62107, NAPA NBH8683, CarQuest 21993 or equivalent	
Connecting tube to radiator	Gates 20620 or equivalent	
Radiator hoses, small Block	See trimming instructions on page 39.	
Lower hoses	Gates 20620 or equivalent (Connecting tube to radiator)	
	Gates 20390 or equivalent (Pump to connecting tube)	
Upper	Depends on expansion tank	
Ford 429/460, Lower	Same as FE	
Upper	Gates 20869 (trimmed)	
Chevrolet, 427, Lower	Gates 20620 (trimmed 2" off end)	
Radiator expansion tank	1964 T-Bird big block	E.R.A.
Thermostat	See page 9 for hints	

Starter (FE engine)	Delco 323-217 (OEM type), Powermaster 9406 (gear drive style)	All FE engined Fords, 1964-69
	The Shelby aluminum block requires a Powermaster (9406) or CVR (5049 or 503\49M) starter.	
Starter solenoid	Ford B6A2-11450 A, or C9AZ-11450 A, or C7AF-11450 A (used on Ford products 1956-1980)	Dealer or auto parts store
Steering column, upper	E.R.A. Reproduction or Triumph Spitfire, GT-6 (1972-mid 1977)	E.R.A., wrecking yard
Steering column Bushings	Triumph	E.R.A., dealer, Moss Motors
Steering wheel	Moto-Lita	E.R.A.
Wheel hub Triumph column	Moto-Lita	E.R.A.
E.R.A. column	Comes with E.R.A. column	
Steering wheel Center button	Reproduction of original either "AC" or "Cobra" motif	E.R.A.

Speedometer Cable Ford Top Loader Richmond Gear	AC 11589234 (1967 Mustang) Champ 400020 See page 13 for other parts.	E.R.A., dealer, auto parts store
Cable drive gears, etc. **Top Loader, T-5, Tremec** Speedo drive gear Speedo **driven** gears Retaining clip **Cable drive - Richmond Gear**	 C4DZ-17285A (LH, 7 tooth, black) C8AZ-17285A (RH, 7 tooth, yellow) ***See parts and selection notes on page 14.*** C1DZ-17292A ***See parts on page 13 and 14.***	E.R.A., Dan Williams Ent Ford dealer **RH driven gear**

Spare Wheel/Tire	Space Saver w/ 4 $^{3}/_{4}$" bolt circle (Non 6-pin only) Pin Drive	G.M. cars Trigo
Transmission:	Ford Top Loader Richmond Gear 5-spd for FE Ford Tremec TKO 5 speed (See notes on page 13.)	Dan Williams, GT Performance, David Kee E.R.A., Richmond Gear E.R.A, Summit, Fortes
Transmission mounts: *Ford Top-loader* w/ 2 holes along centerline or 2 transverse holes 5.6" apart Ford Top-loader w/ holes 6.25" apart Ford C-6 Automatic Richmond Gear 5 speed and Tremec TKO 3550, II TKO 500, 600, standard input 500, 600 with short input	 Ford C8ZZ-6068A, or Republic 31-2258 Ford C9AZ-6068E or Republic 31-2242 Ford C9AZ-6068H, or Republic 31-2345 Pioneer 622378 (72-73 Camaro w/MT). Pioneer 622378 plus **an adapter** from ERA Pioneer 622378. Requires straight $^{5}/_{8}$" spacer. Same as above with offset spacer.	 Ford dealer, E.R.A., auto parts supplier Auto parts supplier
Throw-out fork Big spline T.L., Richmond Gear 5sp Small spline T.L., Tremec TKO including 500, 600 **Pivot bracket for above**	***Note! Both forks listed below** Ford C8OZ-7515D (May be hard to find – As a substitute, ERA widens the small-spline. (The edge must still be modified per page 34.) D0TZ-7515A or Pioneer CF-101 (Hole added) (Must be modified per page 34.) Ford C8AZ-7522B (NLA from Ford)	 David Kee, E.R.A., Tony Branda David Kee, E.R.A., Tony Branda David Kee, E.R.A., T.Branda

Shift Linkage		Mid-sixties Ford
4-spd. Top-loader	Modified Hurst (391-3180) recommended. The rod lengths must be modified when the shifter is moved to the correct location. (See page 15) Inquire about a plate that may be necessary.	
Richmond Gear 5 speed	Long shifter.	E.R.A.
Shift Lever: Curved Ford unit to duplicate original Cobra	See page 47 for modifying the Mustang lever, or contact ERA for finished units.	E.R.A., 1965-67 Mustang and other period Fords
Voltage Regulator	Ford Regulator D4TZ-10316A, D9PZ-10316A or aftermarket equivalent. (Fits early '70s Ford with external regulator.)	Ford dealer, E.R.A.
Windshield Wipers		
Motor and Drive Parts	From 1969-1976 Triumph Spitfire, GT-6 or TR-6	
Arms	Lucas BHA-520l	E.R.A., Lucas parts dealer
Blades	Lucas GWB-164	E.R.A.,
Chrome Bezels (Bush Kit)	Lucas 60600 429	E.R.A., Lucas dealer
Wheels :		
Bolt-on wheel, Front	7"-8" x 15", 4¾" bolt circle with 3.3"-3.5" backspacing	
Rear	8½"-10" x 15", 4 ¾" Bolt circle, 3.3"-3.8" backspacing (with the wider wheel having more backspacing.)	
Reproduction Halibrand GT40 style aluminum, pin drive	7½ x 15 and 9½ x 15 Various widths in 17"	E.R.A., Trigo, Vintage Wheels PS Engineering, Vintage Wheels
Reproduction Sunburst street type aluminum, pin drive,	7½ x 15	Only OEM take-offs
Spare Tire/Wheel Bolt-on	GM (Camaro) space saver *See note on page 138.	
Pin Drive	PS Engineering or Trigo	

SOURCE MASTER LIST

Because of rapid changes in area codes, these phone numbers may be out of date.

BUSINESS NAME	SPECIALTY	ADDRESS
Arthur Allen Mfg. arthurallen.com	Speedo reducers, angle drives	235 E. O'Connor Drive, Elkhorn, WI 53121 (800)683-500
Aviaid Oil Systems aviaid.com	Oil pans and pickups	10041 Canoga Ave., Chatsworth, CA (818)988-8991
Branda Performance cobranda.com	Ford parts	1434 Pleasant Valley Blvd, Altoona, PA 16602, 814-942-1869
Canton Racing Products cantonracing.com	Oil pans and pickups	9 Tipping La., Branford, CT 06405 (203) 481-9460
Carroll Shelby Ent. carrollshelbyent.com	Engines/parts	19021 S Figueroa St., Gardena, CA 90248 (310)538-2914
Cobra Restorers Ltd. cobrarestorers.com	Reproduction Cobra hardware	3099 Carter Circle, Kennesaw, GA 30144, (770)427-0020
Dan Williams Enterprises toploadertransmissions.com	Transmissions and shifter parts	205 E. Dogwood Dr., Franklin, NC (828)524-9085
David Kee Transmissions 4speedtoploaders.com	Top Loader transmissions, parts	San Antonio, TX (210)967-4161
Ford Motorsport Performance Equipment	Ford parts	Clinton Twp, MI 48036, (810)468-1356
Fortes Parts Connection	Transmissions, parts	376 Cambridge St, Burlington, MA (781)273-9900
Genesis Performance genesis427.com	Engines and parts	P.O. Box 19449, Indianapolis, IN 46219 (317).357.8767
March Performance Pulleys marchperformance.com	Engine pulleys	32413 Park Lane, Garden City, MI 48135 (888)729-9070
Mustangs Unlimited mustangsunlimited.com	Shelby/Mustang parts	185 Adams St., Manchester, CT 06040 (800)243-7278
PS Engineering	15" and 17" Pin drive wheels	2675 Skypark Dr. #102, Torrance, CA 90506 (310)534-4477
Reider Racing reiderracing.com	Jag differential rebuilding	12351 Universal Dr., Taylor, MI 48180, 800-522-2707
Richmond Gear richmondgear.com	5 speed transmissions	1208 Old Norris Rd., Liberty, SC 29657, 864-843-9231
Summit Racing Equipment summitracing.com	Misc. parts at low prices	580 Kennedy Rd., Akron, OH 44305 (800)230-3030
Trigo, Inc. trigowheels.com	Pin drive wheels	3933 Foothill Blvd, La Cresenta, CA 91011 (818)248-7446
TrueChoice truechoice.com	Racing parts, fire extinguisher systems	40 Industrial Park Place, Powell OH 43026 (800)388-8783
Vintage Wheels vintagewheels.com	Pin drive and bolt-on wheels	14805 Fisher Cove, Del Mar, CA 92014 (619)952-4717

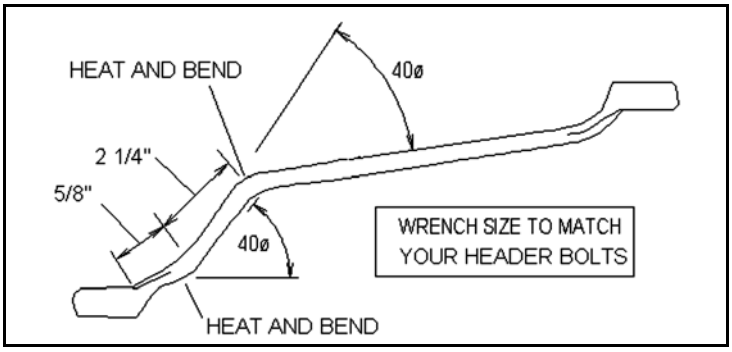
TOOLS NEEDED

Most of the tools required for assembly of the E.R.A. 427SC are found in the average car person's home workshop.

Major components like the engine and transmission require some specialized tools and skills. If you are not experienced, the engine and transmission may not be a good time for your first project, but assembly of the rest of the kit is very straightforward.

Rebuilding the **Jag rear suspension** assembly can be done at home if you are well equipped. A micrometer, dial indicator and standard mechanics tools are required. No matter what your experience, this operation requires a good manual.

Heat and bend a wrench for the left upper exhaust header flange bolt.



Tool List

Body Installation

- Pop rivet gun with adapters for 1/8" and 3/16" rivets
- Electric drill with bit assortment
- Utility (razor) knife
- Paintbrush 1"-1.5" (buy a cheap natural bristle brush)
- Shears or large scissors
- Caulking gun - (cartridge type)

Mechanical Bits

- Ratchet wrench and sockets
- Open-end and box wrenches 1/4"-1"
- Screwdrivers (Phillips and flat bladed) 3 or 4 sizes of each
- Jack, preferably a hydraulic floor type
- Small needle nose pliers
- Engine hoist or chain fall
- Oxy-acetylene or small MIG welder (for side pipe brackets)
- Rubber mallet
- Saber saw (if you are fitting side pipes)
- Socket head (Allen) wrenches
- Jack stands (4)
- Special wrench for exhaust headers (see picture at left)

SHIPPING COMPANIES (PARTIAL LIST)

Horseless Carriage
Phone: (800)631-7796

Intercity Lines (www.intercitylines.com)
Phone: (800)343-0802
Fax: (413)436-9422

SECTION A -PARTS NEEDED-

SUPPLIES NEEDED

The following list covers most of the materials you will need to complete your kit.

* Not necessary with bonded-body option

***Caulking to seal body to chassis**	Urethane or Silicone, 5 cartridges min.	For caulking gun
***Adhesive** for bonding rear body bonding strip	Polyester resins thickened with fillers and binders are available for boat repair	Corvette body repair boat shops and Chevrolet dealers, body shop suppliers or specialty houses Regular polyester body filler and the stronger fiberglass strand fillers such as "Tiger Hair" or "Rot Out" can also be used but these fillers have the disadvantage of setting-up rather quickly making the completion time of the bonding operation critical.
***Blind rivets** Aluminum panels to chassis	(200) 1/8" dia. x 3/8"-1/2" long, button head	
Aluminum to aluminum panel connections	(200) 1/8" dia. x 3/4"-3/8" long, button head	
Aluminum panels to chassis	(60) 3/16" dia. x 1/2" long, large flange, aluminum or stainless steel	
Hood scoop	(50) 1/8" dia. X 1/4" long, aluminum mandrel	
Chassis lubricant (grease for universal and ball joints)		
Wheel bearing grease (disc brake high temp. type)		
Contact cement (fast dry type)	1 qt.	Auto upholstery shop or supplier
Weather-strip adhesive (or use contact cement)		
Foil faced foam or insulation mat'l:	Frost King duct insulation, FV516	Building supply, heating and air conditioning supply, hardware store

SECTION B:
PARTS PREPARATION

Restrictions or modifications to the donor parts for the 427SC
This section does not cover engine, transmission or rear suspension rebuilding. Use dedicated rebuilding manuals for your specific equipment.

Special Note!

During the time you spend while building your kit, you should protect the following items from moisture, dirt and aging:

- Brake and clutch master cylinders
- Clutch slave cylinder
- All brake lines and fittings
- Fuel lines
- Brake pedals and throttle linkage
- Front and rear shock absorber seals: Spray with rubber lube, silicone or cover with silicone grease

ENGINE/COMPONENTS

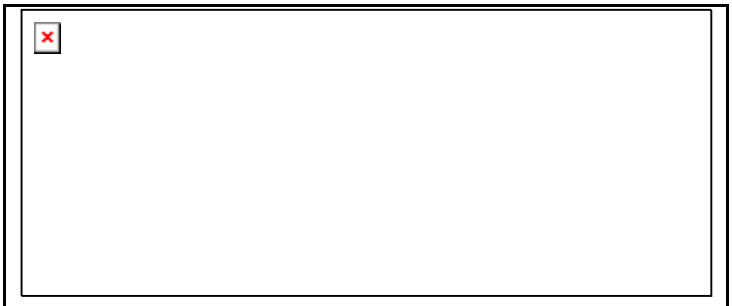
*We cannot give complete rebuilding instructions here. What follows are the **E.R.A.-specific requirements** for your engine. General torque specifications for typical bolts are found on page 151. Good reference books for Ford engines are listed on page 153.*

BASIC PREPARATION

Remove cooling fan from engine water pump pulley.

Install the fitting for the water temperature gage in the intake manifold adjacent to the distributor. Note that some manifolds must be tapped $^{1}/_{2}$"NPT. If your manifold is tapped $^{3}/_{8}$" NPT, you may be able to adapt with a Weatherhead fitting, 3200 x 8 x 6 available at your local jobber.

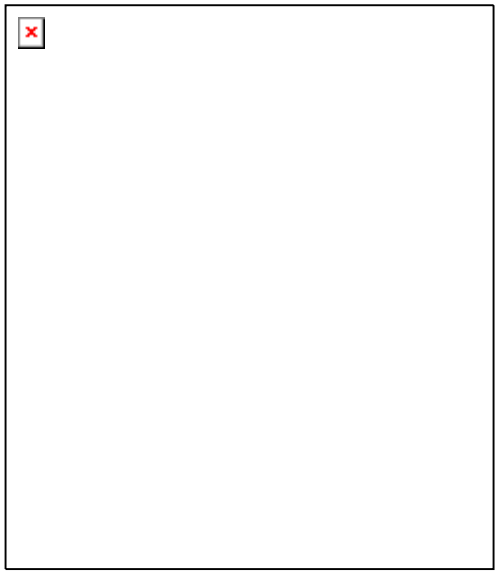
Install the mounts onto the Ford **small block** as shown below



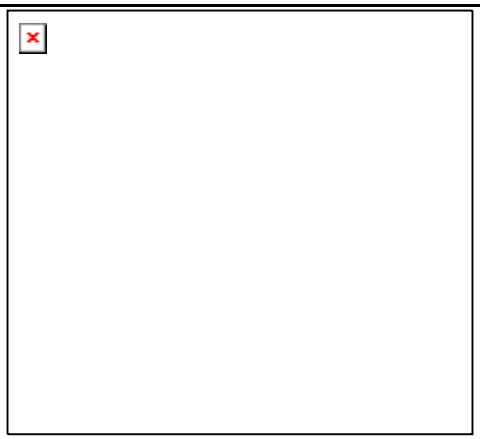
Ford Small Block

b\sbengmt

The FE mounts look similar but they cannot be exchanged from side to side. Note that the stud surface is angled slightly from the engine side.



Install the engine mounts onto **the FE block** as shown below.



Ford FE Engine

b\engmt

Note: If you have excessive engine motion or a very high-torque engine, go to www.erareplicas.com/427man/engine/mountmod/ for mount modification details.

ALTERNATOR MOUNTING:

FORD SMALL BLOCK:

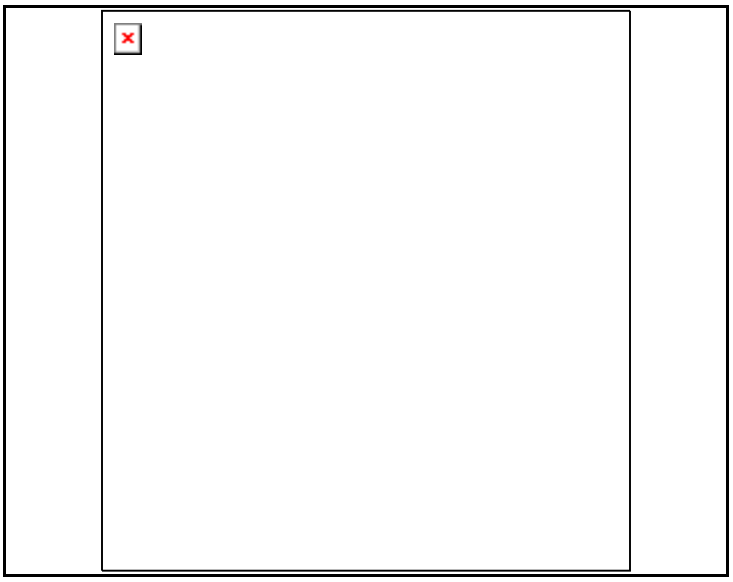
Serpentine belt engines *must change to the following components:*

1980 lower pulley - modify by removing the outside groove.

1980 upper pulley

1979 water pump

The **alternator** pivots in the outer Mounting hole in the head. Some aftermarket heads require a threaded insert to reduce threads to $^{7}/_{16}$"USS (Ford # F4ZZ-6E086-A). An adjusting strap between the alternator and the upper right water pump bolt is optional. Also included is a reinforcing bracket from the water pump to the outer end of the pivot bolt.



b\sbalt

Install the long bolt through the reinforcing bracket, alternator and spacer tube.

Bolt the assembly onto the cylinder head.

Install the top adjusting bracket as shown.

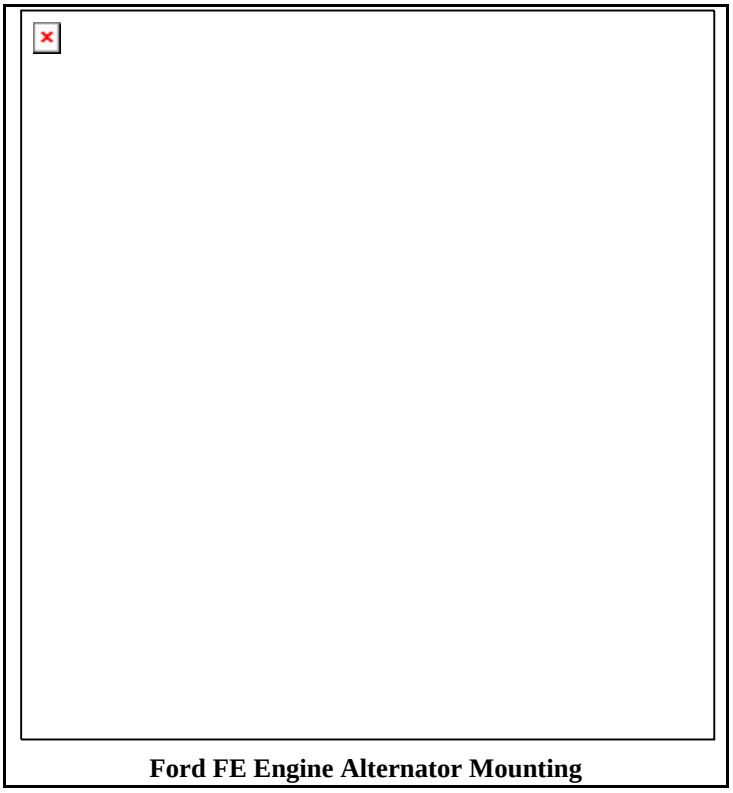
Loosely secure the inner end of the reinforcing strap to the water pump bolt as indicated.

Tighten the alternator pivot bolt.

Tighten the reinforcing strap bolt.

Check the alignment of the pulley grooves with a straight-edge. Add washers or shorten the spacer as needed.

ALTERNATOR MOUNTING, FE BLOCK:



Ford FE Engine Alternator Mounting

b\Altbrk2

If you have a pressed in pin at **D** replace it with a threaded-in stud. Use a $^{7}/_{16}$" bolt to secure the bracket to the block at **A**. Use a $^{3}/_{8}$" bolt at **B**. If there is no hole at (b), slide the short strap to the base of stud **E**. Connect the other end to the water pump bolt **C**. (We frequently use the strap in lieu of the second bolt.)

Two different length spacers plus washers are provided to shim the alternator for aligning the pulleys.. Slide the longer of the two spacers onto the stud.

Slide the alternator on the stud, and then install the long strap to the water pump at **F** – use sealer on both sides of the the strap to prevent water seapage. It may be necessary to remove the water pump pulley for installation.

Replace the pulley. Use a straight edge across the pulleys to determine whether they are in line. If not, use the other spacer and/or washers in any combination to achieve alignment. Install an original adjusting strap (C6AZ-10145B) or the E.R.A. replacement between the alternator and stud **D** on the water pump.

CLUTCH

Install the clutch pilot bearing,, driven disk and pressure plate.

CLUTCH THROW-OUT FORK

Forks for small and large spline transmissions are available from E.R.A.

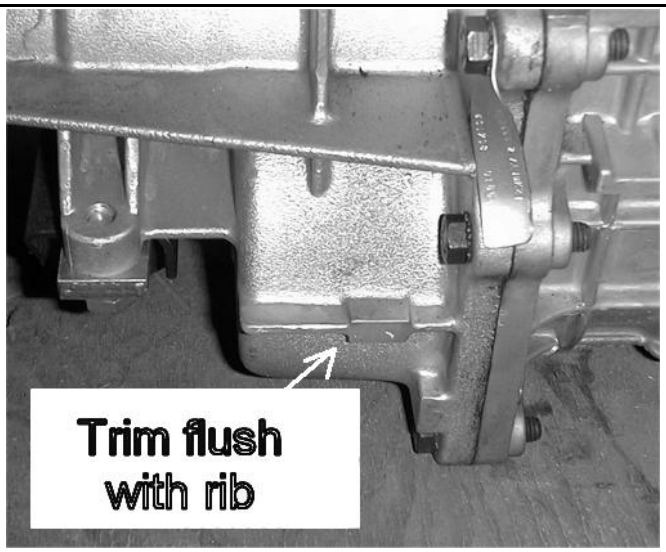
The standard Ford small-spline fork (see page 25 for part number) can be left stock or bored through for easier adjustment. Drill (remember that the part is hardened) the indentation to $^{5}/_{8}$" id.

Fork installed in TKO 600

TRANSMISSION

TREMEC

The Tremec TKO series has a boss on the right side that must be trimmed back flush in order to clear the chassis X brace.



TKO 3550, TKO II

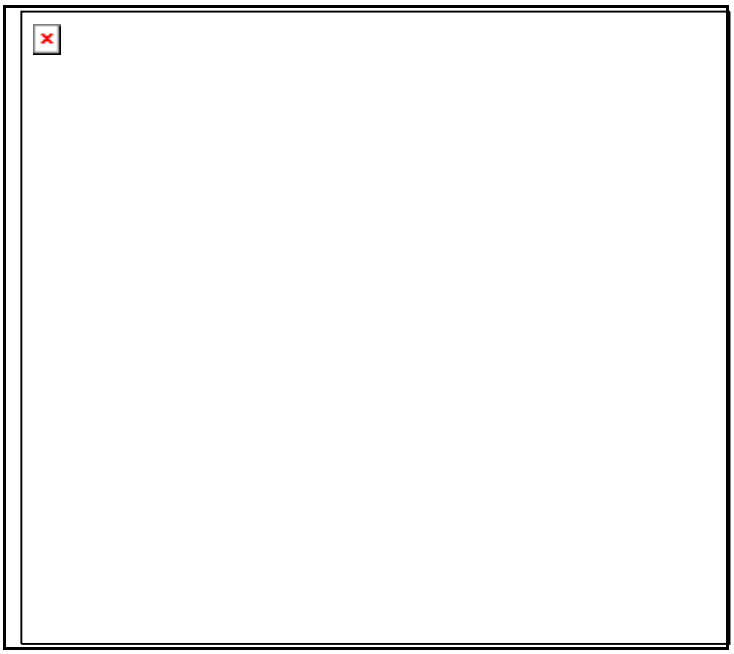
TKO 500/600

Install the spacer between the mount and the mounting boss. The offset (standard length input shaft) goes toward the rear.

Note that the TKO 600 is metric-threaded (10 x .1.5) on the inner holes, ½-13 on the outer holes.

BELL-HOUSING

Many blow-shield type bell-housings have a large bottom flange that will extend below the chassis. Trim the engine plate as shown and use it as a template to trim the bell-housing flange. This dimension applies to all engines, although the trimming operation may not be necessary for some.



b\belltrim

For other engines, trim the bell-housings similarly, using the distance from the centerline of the crankshaft to the bottom edge of the flange.

The optional E.R.A./Lakewood blow-shield is already trimmed on the bottom edge.

Note that every bell-housing should be checked for alignment/concentricity! Use a dial indicator on the flywheel to indicate the inside diameter of the transmission hole of the bell-housing. Offset bushings to shift the centering are available from Lakewood and Ford.

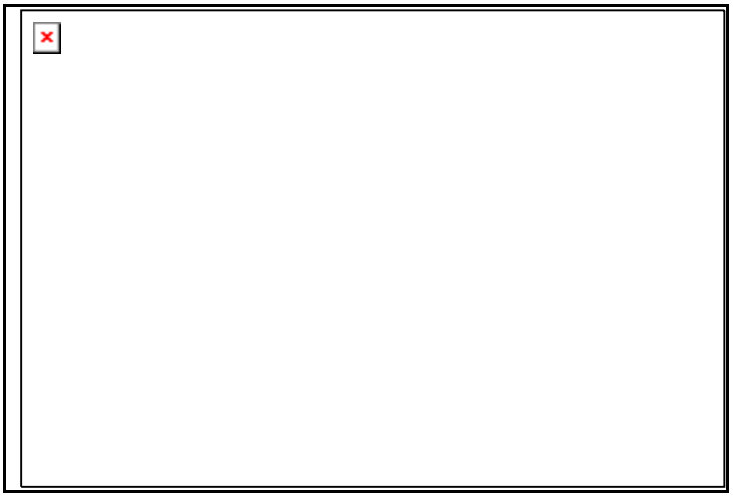
CLUTCH SLAVE CYLINDER (EXTERNAL)

See page 137 for hose installation.

SMALL BLOCK:

The bracket and slave cylinder assembly is fastened in three places:

- The tapped hole on the left side of the block bell-housing flange (where the original clutch shaft pivot ball went).
- The rear bolt of the left engine mount..
- The left rear oil pan tapped hole.



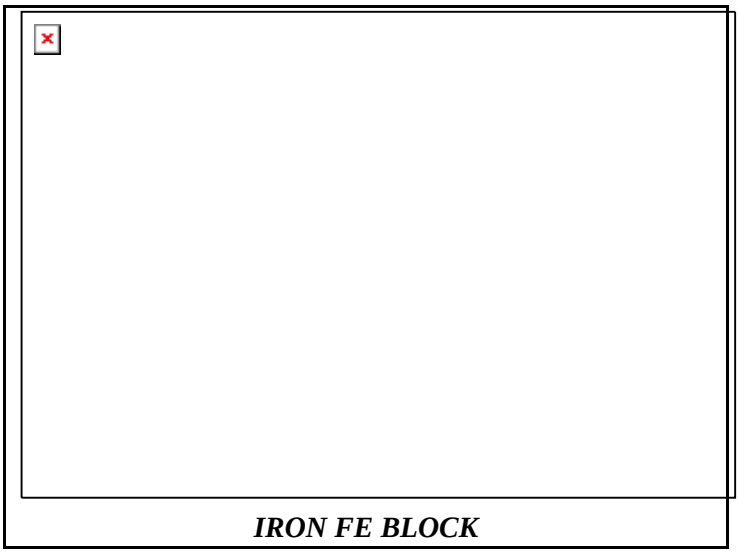
clslave (part 1)

SECTION B -PARTS PREPARATION-

FE ENGINE

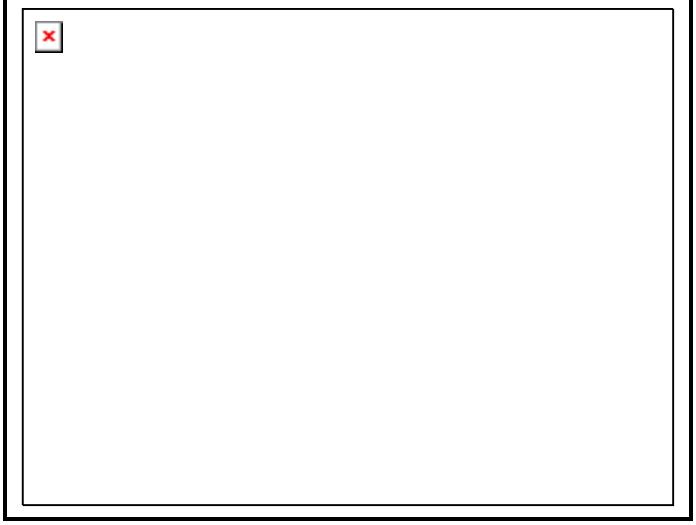
The adapter bracket and slave cylinder are installed with a single bolt on the front side of the left rear engine block bell-housing flange. The slave cylinder points toward the rear, and the locating strip on the adapter bracket goes beneath the engine block machined surface.

**Note! On some aluminum blocks the hole does not go all the way through the casting. You must drill through (3/8") and tap the hole (7/16-14) from the transmission side.*



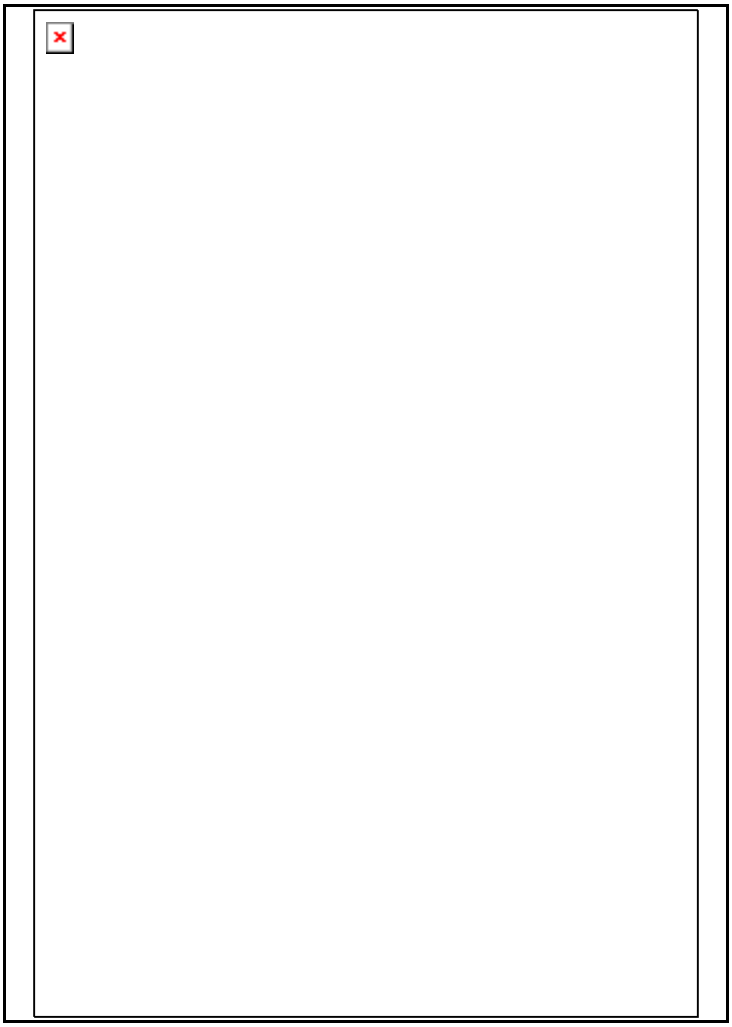
IRON FE BLOCK

Note 2! *Most clutch pressure plates won't require the spacer shown below. Some, however, have tall fingers that move the fork connection forward. The spacer moves the slave assembly forward and inward, correcting the alignment. If the alignment is still off, the corner of the aluminum block can be ground so that the slave bracket can be rotated slightly.*



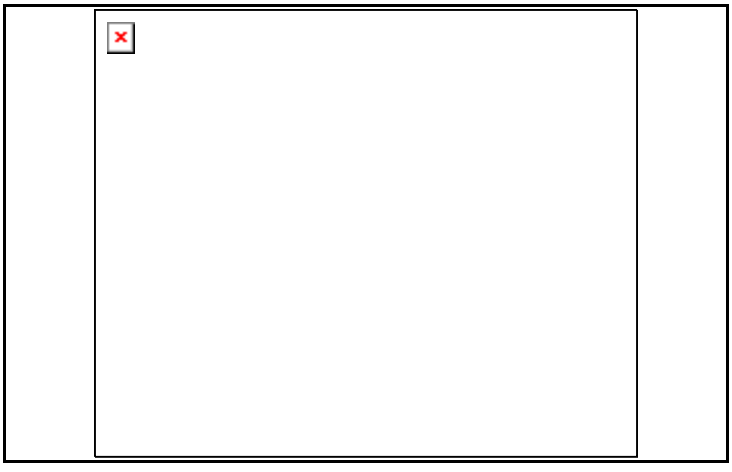
SHELBY 427 BLOCK

The bracket for the Ford FE block must be modified to fit. Remove the locating tab and drill two new holes. Note the shims under the bottom bolt to square up the bracket to the block face.



429/460 FORD

The slave cylinder is mounted on the bell-housing as shown.



b\clslv460

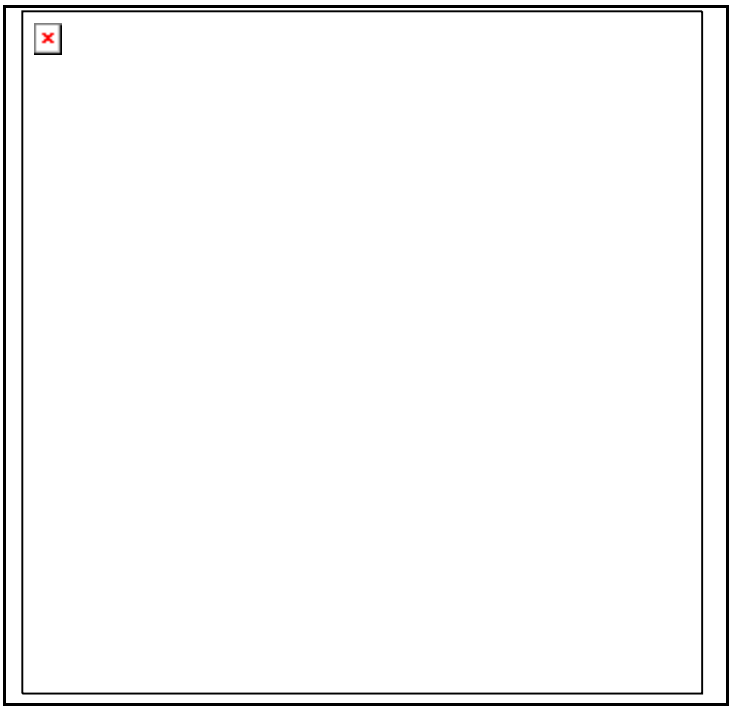
CLUTCH THROWOUT ROD

E.R.A. supplies two threaded rods between the clutch slave cylinder and the throw-out fork in the bell-housing. If your throw-out lever has a hole in it, use the long threaded rod. If there is just a socket, use the short rod. See page 137 for assembly.

Install the correct link either by shortening the adjustment or loosening the adapter bracket from the block. A return spring is optional.

SLAVE CYLINDER, INTERNAL

Some clutch/transmission combinations work best with an internal (concentric) clutch slave cylinder. This type of clutch release is self-adjusting, but requires careful initial adjustment to compensate for different clutch finger heights. It is very **sensitive to proper setup**.



We typically use Weber brand, and have found them to be reliable if properly done. When you assemble your car, it is essential to follow the installation guidelines. Pictures and procedures shown here are particular to Weber - yours may be different. Always read and follow the instructions for your setup.

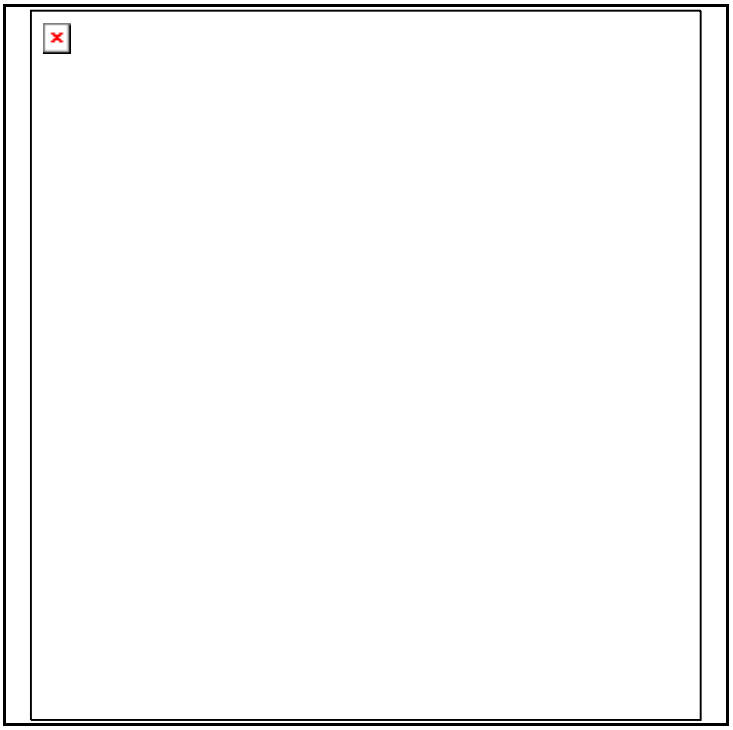
Weber brand cylinders (and most others) have no system to keep the "piston" from being pushed too far out of the cylinder - and puking fluid all over the floor. The ERA requires a **pedal stop** so that the master cylinder stroke is limited.

NOTE!

McLeod recommends that you remove any centrifigul weights on the clutch pressure plate when you use a concentric throwout bearing.

ADJUSTMENTS

"Permantly" install all the clutch components onto the flywheel, using an alignment tool for the driven disc.



Install the bell housing. Place a straight-edge across the bell housing opening to measure the height of the fingers below the opening. Make sure that the cylinder piston is pushed all the way into the housing.

Adjust the height of the bearing on the transmission by screwing the threaded adjusting sleeve in or out of the slave cylinder so that when the transmission is installed, there will be the indicated clearance.

After the transmission is installed permantly, recheck the clearance and connect the pressure hose to the clutch master cylinder.

Attach the bleed hose to the bellhousing flange at a conveniently accessible location.

OIL PAN:

There are several aftermarket pans and OEM Ford designs listed on page 23. If the pan does not have a oil temperature bung, weld the oil temperature adapter fitting (packed with the auxiliary instrument pieces) onto the left side.

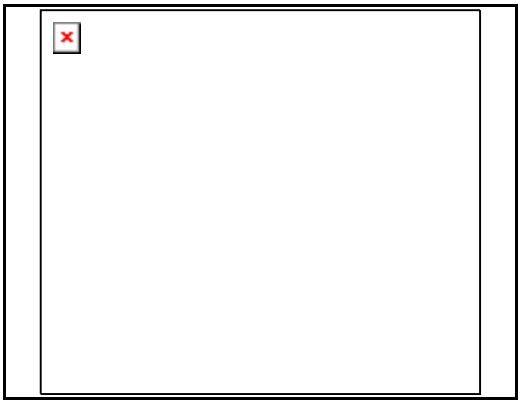
With a Ford small block, keep the full-length pan depth less than 8.3" to prevent the pan from hanging below the chassis. If your pan kicks up in the back, you can go to 8.7" depth.

STARTER

Any standard or aftermarket starter may be used.

THERMOSTAT

We recommend that you drill 3/16" bleed hole in the thermostat as shown below. This will allow a small amount of water to pass all the time, plus facilitate air bleeding. Install into the manifold with the hole up.



EXPANSION TANK (FE BLOCK)

Used Ford tanks can be reversed so that the outlet exits on the left side as shown. Unfortunately, our experience has shown that most original tanks (20+ years old by now) have corrosion and fatigue problems, even after close scrutiny and careful rebuilding. Fortunately, **new expansion tanks** are now available from E.R.A.

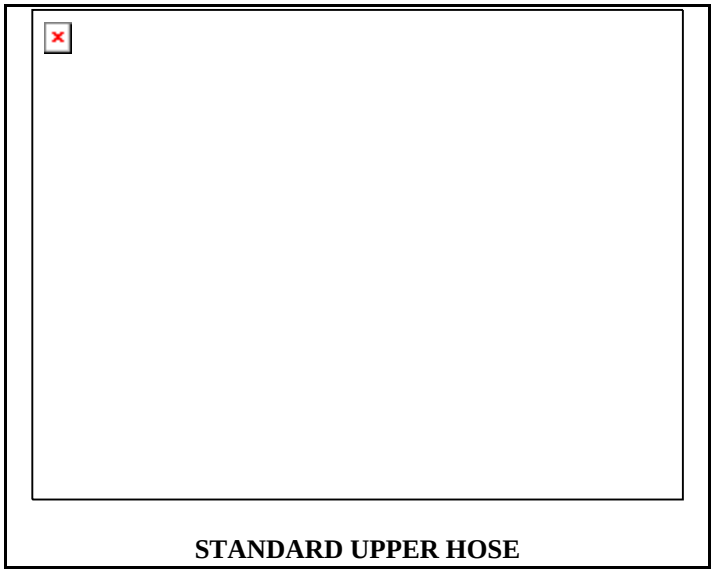
If you don't wish to do this job yourself any radiator shop can handle it

B/HEADTANK

RADIATOR HOSES:

The installation layout is also shown on page 144.

FE (390/427/428 ENGINE)

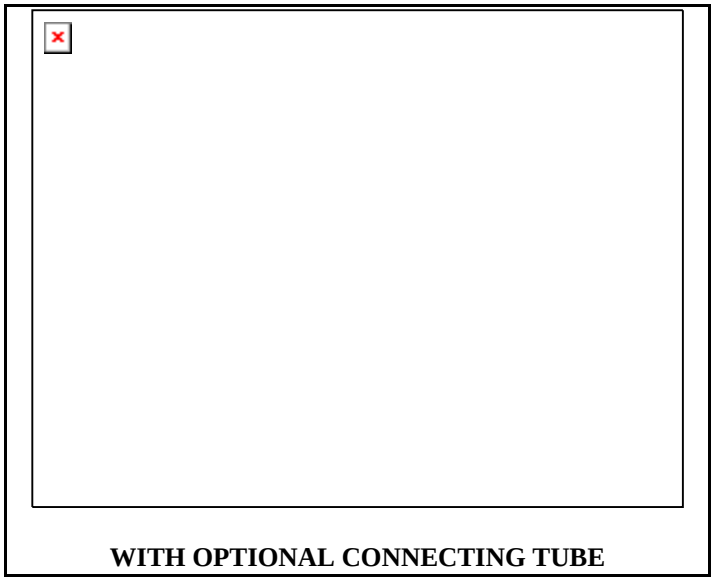


STANDARD UPPER HOSE

21047: Standard cast-iron water pump, others with 2" inlet

62107: Some aluminum water pumps with 2 ¼" inlet

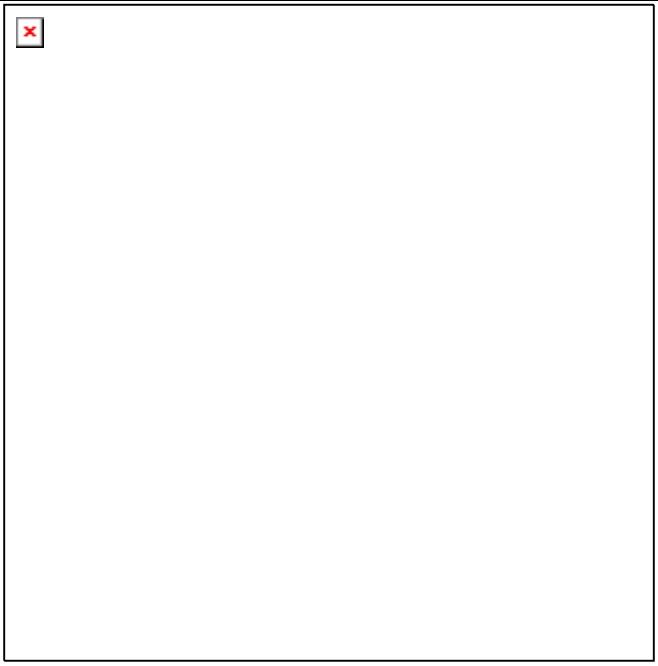
21258: Ford Small block



WITH OPTIONAL CONNECTING TUBE

HOSE TRIMMING INSTRUCTIONS

The two lower radiator hoses must be modified to fit. After checking fit, cut and trim the hoses as shown.

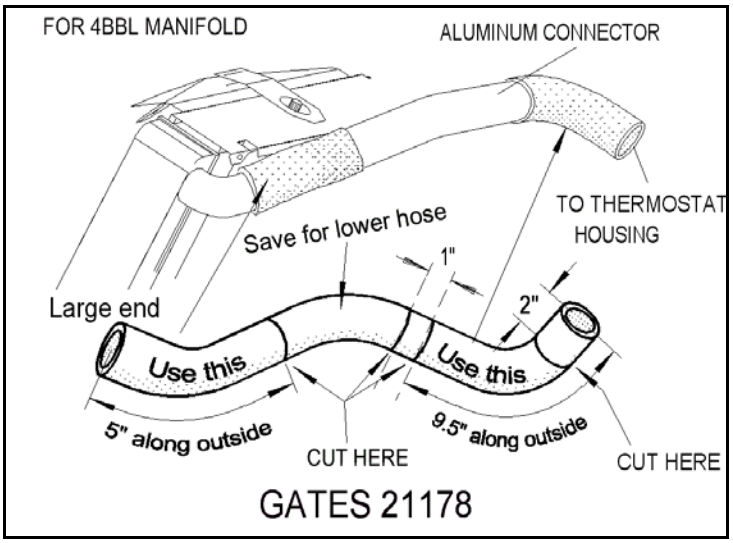


Connecting hose for aluminum water pump. This substitutes for the 21047 shown above.

SMALL BLOCK FORD

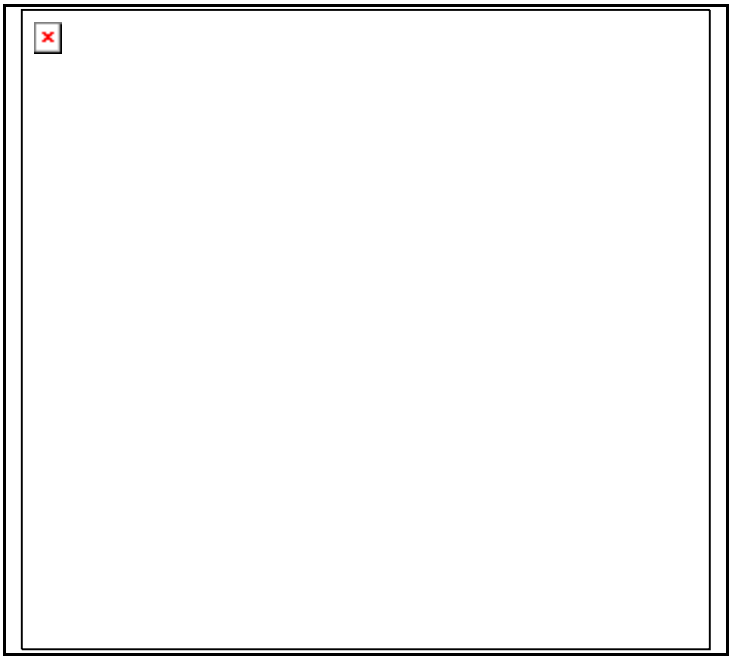
Use the center portion from the radiator to the lower connecting tube. (You must tell us that you're using a small block when you order.)

Upper hose



The long leg of the aluminum connecting tube goes toward the radiator.

Lower Hose, Ford small block



429/460 FORD

Lower hoses are the same as the FE Ford.
You must use an in-line filler cap (i.e. Moroso) or an expansion tank. If you are using an in-line filler only, you must use an overflow system that replenishes the system automatically.

Pad the "X" member if the upper hose touches it.

REAR SUSPENSION, JAGUAR:

DISASSEMBLY

See the exploded view of the lower control arm on page 42. The following Jaguar core/parts should be thoroughly checked and rebuilt if necessary: brake calipers, emergency brake pads and linkage, universal joints on half-shafts, hub carrier and lower control arm bearings. Bearings, etc. are listed on page 148. We have found that the **Spicer®** U-joints listed are the only brand that meets the standards required of the Jaguar half-shafts (and we've tried quite a few).

Replace any corroded or damaged brake lines. Be sure to use lines with the proper end flare and fittings. Note that some British fittings have a convex (bubble) flare that mates with a concave receptacle in the caliper. While this is similar to some metric fittings, the threads are SAE. It is not possible to make these flares with a conventional flaring tool. Aftermarket suppliers and Jaguar dealers have these British style lines.

Mount the brass junction block on the left front of the cage, with the fitting for the flex hose up. If your rear suspension core has the junction block pointing forward, fabricate a small bracket from 1/8" steel strap. Install the hose (mounted on the chassis, originally) onto the junction with a copper "0" ring.

ASSEMBLY

The description below is a supplement to a good Jaguar manual, not a substitute. Refer to the Jaguar instructions for a detailed breakdown of the assembly sequence and parts.

*E.R.A. does **not recommend** that urethane bushsing be substituted for the roller bearings in the bottom of the hub carrier. Their excessive flex will cause wheel hop.*

E.R.A. SUBFRAME

Build the differential, installing the brake rotors and calipers outside the subframe. **Note**: If you are using the competition 12" vented rotors and aluminum calipers, the rotor and caliper must be installed after the differential is in place.

Find the brake-hose mounting tab on the front of the subframe. See page 99. Lower the subframe over the differential while rotating, so that the front of the subframe goes around the pinion first. Use ½" USS bolts to loosely attach the upper mounting plate to the differential casting.

Turn the subframe/differential upside down on a padded surface, with the differential mounting plate down.

Loosely install the side brackets onto the differential case.

Slide the fulcrum shafts through the subframe and brackets. Add shims between the brackets and the differential to take up any side clearance. Tighten the bolts holding the brackets to the case.

If there is a gap between the top of the differential and the mounting plate, **shim** to zero clearance.

Tighten the top bolts.

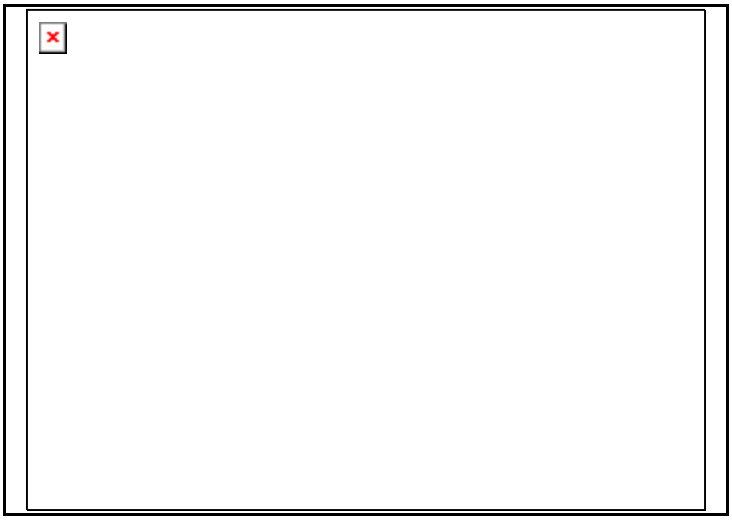
On both the Jaguar and E.R.A. subframe toe-in is determined by the location of the holes in the subframe which are not adjustable. If your toe-in is incorrect, your control arms may be bent.

Install the lower control arm with bearings, etc., into the subframe, using the same parts and procedure with the E.R.A. subframe as the Jaguar subframe.

***Do NOT** replace the control arm roller and needle bearings with aftermarket urethane bushings! The net result will be wheel hop and generally sloppy handling.*

Install the junction block and hose (using a copper washer) onto the bracket on the subframe.

Connect the hard brake lines from the bracket to each caliper.

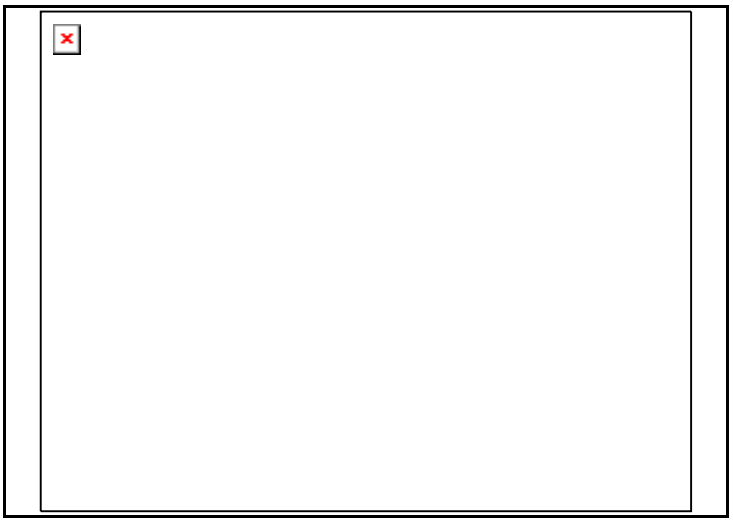


b\jagcage

TRAILING END ROD ENDS:

Install the trailing arm rod ends onto the lower control arms in place of the original trailing arms. Use the spacers provided to center the rod end on the bolt.

On late rears the securing bolt screws in from the inside of the brackets. On earlier cars the bolts are inserted from the outside (hub side). If the bolt head protrudes from the recess on the control arm, grind it flush with the outer edge of the recess. Otherwise, it will contact the hub carrier.



b\tralarm

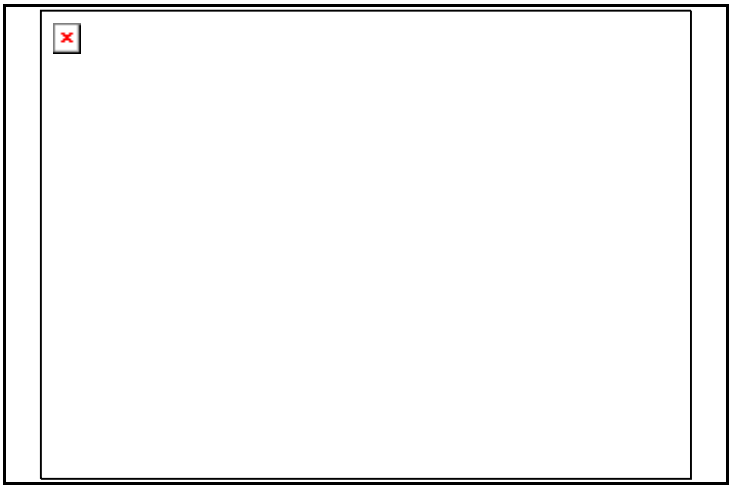
Reinstall the hub carrier onto the half shaft and lower control arm. The trailing arms should be installed onto the rod ends when the suspension assembly is installed into the chassis.

See page 150 for lubricants and capacities.

HAND BRAKE LINKAGE

XKE EMERGENCY BRAKE SYSTEM

If you started with an XKE core, the linkage system will be similar to the picture below. Rearrange your compensator parts as shown.



EB_JAG

Remove the clevis pins securing the brake levers (a) to the compensator links (B + D).

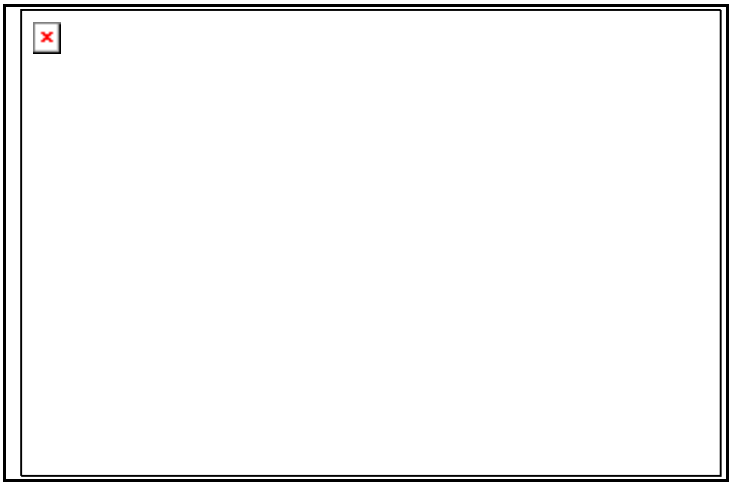
Remove the bolts securing the compensator bracket (c) onto the rear end cage and remove. Remove the cotter pin and the washer securing the bell crank assembly (e) onto bracket (c).

Reassemble the bell crank assembly upside down and onto bracket (c) with washer and cotter pin.

Install the unit onto the cage and replace the clevis and cotter pin securing the links (b and d) onto the levers (a).

XJ6 OR XJ12 REAR SUSPENSION CORE

If you have a block on either brake actuating lever, it must be removed. Pry the lever apart to remove, then squeeze together again. Use a $^{3}/_{8}$" bolt at (A), a $^{5}/_{16}$" bolt at (B).



\B\EB_ERA

STIFFER COIL-OVER SPRINGS:

You may use slightly stiffer springs in the rear to decrease squat on heavy acceleration.

- **All springs listed below are 2 $^{1}/_{2}$" ID.**
- If you have stock XKE springs on stock (or their equivalent) XKE dampers, replace one stock spring on each side with a 10" long x 400 lb/in spring. Alternately, replace all 4 springs with a new 10” x 350 lb/in spring.
- If you have the ERA-supplied Spax damper with adjustable collar, use 8" x 400 lb/in springs for all four springs.

REAR HUBS

BOLT-ON WHEELS:

XJ sedan rear suspension units with original bolt-on wheels have a flange with a 5 x 4 $^{3}/_{4}$" pattern, matching the front Chevrolet hubs. If you are using an XKE rear drive with splined hubs for wire wheels, they must be changed to the sedan pieces. Call E.R.A. for the hubs. We've got take-offs in stock.

PIN DRIVE WHEELS

Six-Pin hubs are available as a direct replcacement for the Jaguar hubs mentioned above. They will fit Trigo, Halibrand and P.S. Engineering wheels.

JAGUAR CONTROL ARMS REPLACEMENT PARTS LIST

(Jaguar OEM part numbers)

Lower control arm and lower hub carrier pivot parts

REAR SUSPENSION, E.R.A. DESIGN

The E.R.A. rear suspension is carried in an aluminum subframe, using a Salisbury differential driving special cast aluminum uprights with outboard brakes. **Most of the axle and bearing parts are from the Jaguar XJ.** Brake calipers are late-model Camaro. Rotors are Wilwood on E.R.A. adapters.

The subframe is mounted to the chassis at the top and at the bottom cross-member through urethane bushings.

Replacement parts are listed on page 148.

You will need the following parts for a complete assembly:

Qt.	Description	Part number
1	E.R.A. conversion assembly, with subframe, lower radius arms, upper and lower trailing arms, hub carrier, all bushings, axle spacers, and all rod ends and fasteners. Also included: brake hat, rotor **Optional**: Emergency brake cables with balance assembly.	
2	Coil-over dampers (Carrera requires coil conversion kit) 14.5" extended length, 10.5" compressed length	Carrera 3356 or 3257 Koni: Ask Spax: G452-AS200
2	Springs	9"L x 450lb/in. (2.25” ID only)
1	Differential, w/o brakes	
2	Stub axle w/washer and nut	
2	Axle flange, bolt-on 6-pin drive	Jag CBC1784 E.R.A.
2	Bearings and seals, hub carrier	See page 148.
	Half-shafts and U-joints	See page 49
2	Brake caliper	

ASSEMBLY

AXLE ASSEMBLY

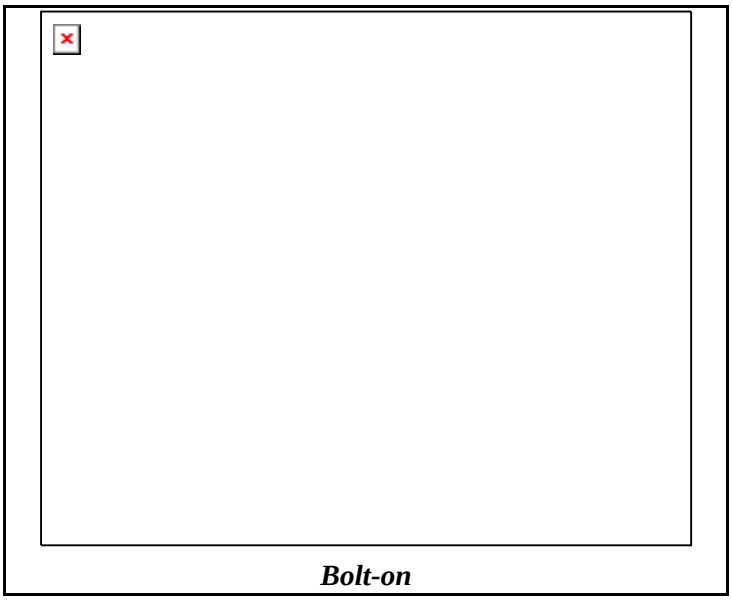
The stock Jaguar XJ inner axle must be shortened to XKE Series I/II length. Alternately, you may build the axle from scratch. Specifications are available from us. Complete assemblies and parts are available from E.R.A.

Clean and deburr the axle splines.

Assemble the stub and inner axle together, replacing the universal joints with genuine Spicer units (5-160X).

Hub Carrier

Some of the lower pivot shafts are a **shrink fit** into the aluminum casting. It may be removed by heating the assembly or, less preferably, by using a press. Generally, removal is not necessary. Later pins are threaded into the casting and retained by a setscrew and Loctite®



Bolt-on

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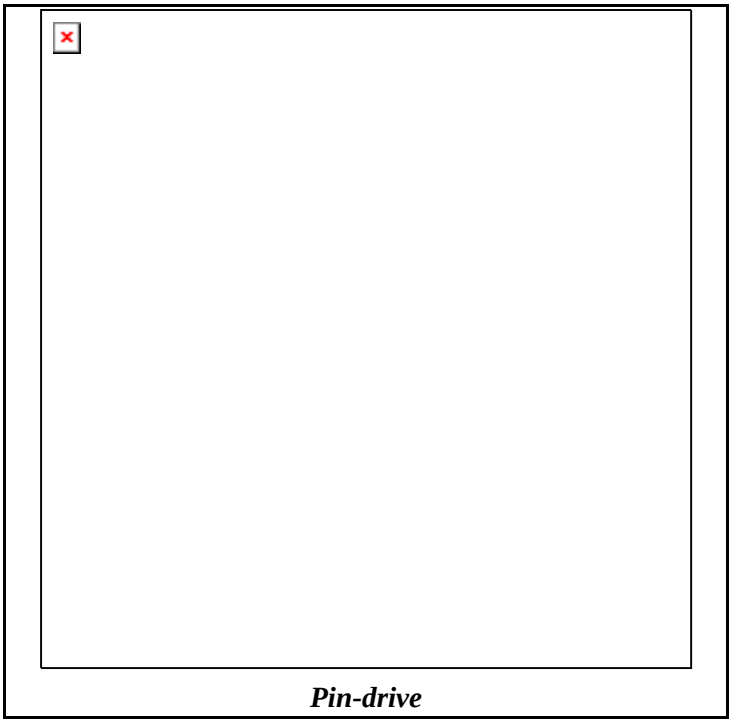


Pin-drive

cob\man2\b\rerahbpd

Clean the hub carrier casting of any machining debris, especially on the inside.

Press the inner and outer bearing races and outer seal only into the carrier.

Install the seal race and the outer bearing onto the hub. Make sure that both are completely seated.

Install the seal race onto the stub axle.

ADJUSTING HUB END FLOAT

When the hub carrier is assembled, the end float of the axle/bearing assembly should be .adjusted with shims to between 002" preload to .004" float. Aim for zero. You can change the end float with the correct size of spacer from Jaguar, SICP, Concours West, or E.R.A. See the list below.

Pack the inner and outer bearings with good wheel bearing grease. Also fill (about half-way) the cavity in the hub carrier. Install the inner oil seal.

Technique One

Insert the hub with outer bearing into the hub carrier.

Moderately press the outer bearing onto the small end of the hub so that the bearing seats into the bearing cup. Check that there is no axial play of the hub, but it still rotates freely.

Measure the distance from the hub end to the bearing surface with an accurate dial indicator.

Find the next size larger spacer in the chart.

Assemble the spacer onto the stub axle, install the axle assembly into the hub, lining up the cotter pin holes in each. Install a flat washer and nut. Tighten the nut to 140 lb-ft.

Check the end-play with a dial indicator. If it is correct, tighten the nut to the next near hole and install the cotter pin.

Available shims:

Jag part #	Thickness
CAC3818/10	0.110"
CAC3818/12	0.112"
CAC3818/14	0.114"
CAC3818/16	0.116"
CAC3818/18	0.118"
CAC3818/20	0.120"
CAC3818/22	0.122"
CAC3818/24	0.124"
CAC3818/26	0.126"
CAC3818/28	0.128"
CAC3818/30	0.130"
CAC3818/32	0.132"
CAC3818/34	0.134"
CAC3818/36	0.136"
CAC3818/38	0.138"

Technique Two

Hold the hub carrier vertically in a vise with the inner end of the hub uppermost. Place the special collar tool (Jag tool No. J15) on the hub end. Place the inner bearing inner race on the hub and press the race onto the hub until the inner face is flush with the special collar. This will provide end flat bearings. The end float should then be measured with a dial test indicator. A spacer should then be fitted in place of the Special collar to give end float of .002"-006". Spacers are supplied in the thicknesses shown below.

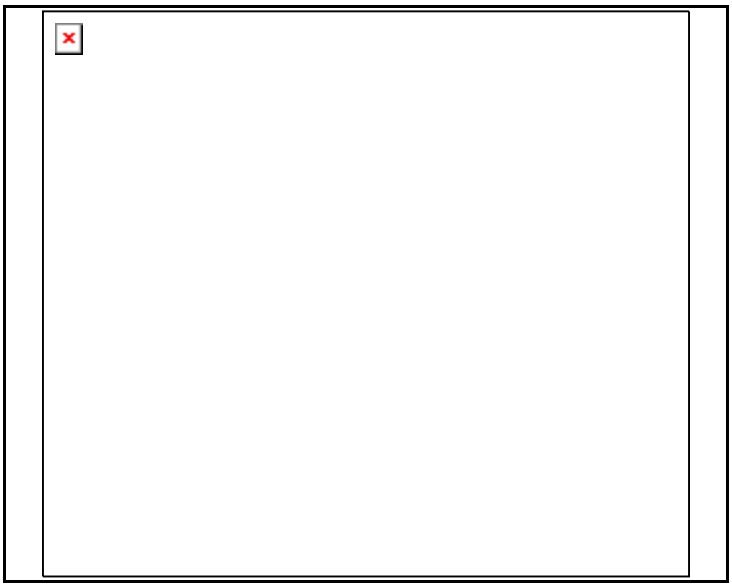
For example, assume the end float measured to be .025". Subtract the nominal end float of .004" from the measured end float giving .021". Since the Special Collar is .150" thick, the thickness of the spacer to be fitted will be 0.150"- 0.021" i.e. .129". The nearest spacer is 0.128" or 0.130". For competition, use the spacer yielding more end float.

When the axle shaft has been fitted and nut tightened (140 lb.ft.), check the end float with a dial indicator. If it is correct, tighten the nut to the next near hole and install the cotter pin.

Install both the seals into the hub carrier.

Re-assemble the hub carrier with hub and axle.

Install the washer and retaining nut. Tighten the nut to 225 lbft. Without an air wrench, you may want to wait until the car is on the ground for final torqueing.



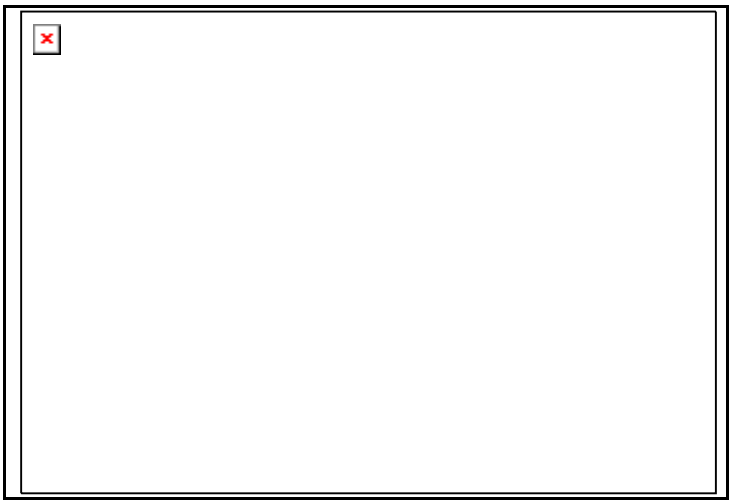
b\erahubc

Install the upper bracket onto each hub carrier and torque the bolts to 75 lb-ft. Note the orientation below.

SUBFRAME

Rebuild the differential as necessary. Some units have a separate caliper mounting bridge on the side bearing housing. This bracket and the original Jaguar rotor can be left off.

Place the differential on the bench, right-side-up. Raise the back up about $^{3}/_{4}$" with a block of wood, etc. Place the the top section of the subframe over the differential, lining up the 4 holes. *Loosely* bolt the top of the subframe to the top of the differential with (4) $^{1}/_{2}$"USS x $1^{1}/_{4}$"L bolts, flat washers and lock washers.



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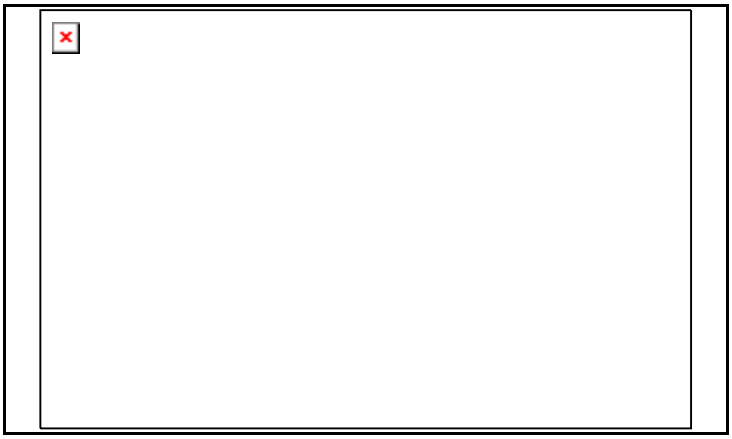
Turn the assembly upside-down. Install the **bottom** section of the subframe by inserting the *rear ears* just in front of the rear flanges of the top. Rotate down in the front to match the front holes and loosely attach the front with $^{5}/_{16}$"USS x $^{3}/_{4}$"L hex cap screws and flat washers. Align the rear flanges of the upper and lower sections with the $^{5}/_{8}$" lower radius arm bolts. Insert the $^{5}/_{16}$"USS x $^{3}/_{4}$" bolts (flat washers on both sides) and secure with stover nuts.

Use Grade 5 torque specs on page 151 for all fasteners

Loosely fasten the bottom of the subframe to the differential using $^{1}/_{2}$"USS x $1^{1}/_{4}$" bolts, flat and lock washers. Shims may be necessary between the channel and the casting, so don't tighten the bolts yet.

Tighten (in sequence) the top differential bolts, the bolts between the top and bottom subframe pieces. If the clearance between the differential and the bottom section of the subframe is greater than .040", insert shims to fill the gap. Use a medium grade threadlocker on the bolts.

Install the bushings and side brackets on the front mount tube. Tighten one castle nut to 5 lb-ft and back off so that the slot aligns with the nearest hole in the shaft. Tighten the second nut to 15 lb-ft and back off to the nearest hole.



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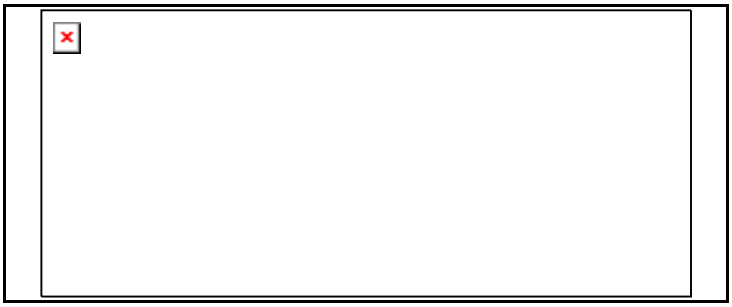
CONTROL ARMS

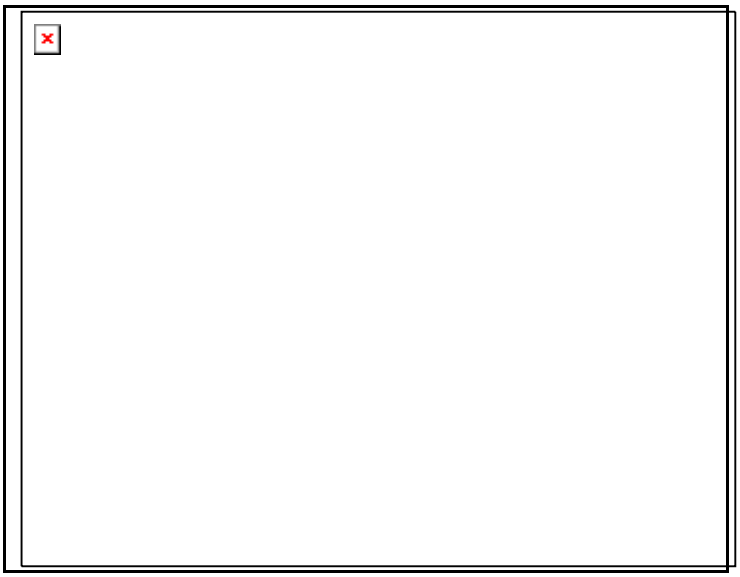
Install a male (right-hand-thread) rod end and jam nut onto each front lower radius arm so that the bushing center to rod end center distance is 16". Leave the jam nuts loose.

Assemble the ***rear*** **radius arm** as shown.



fiat\man\d\rradarm

Install the front radius arms onto the lower differential bracket as shown.



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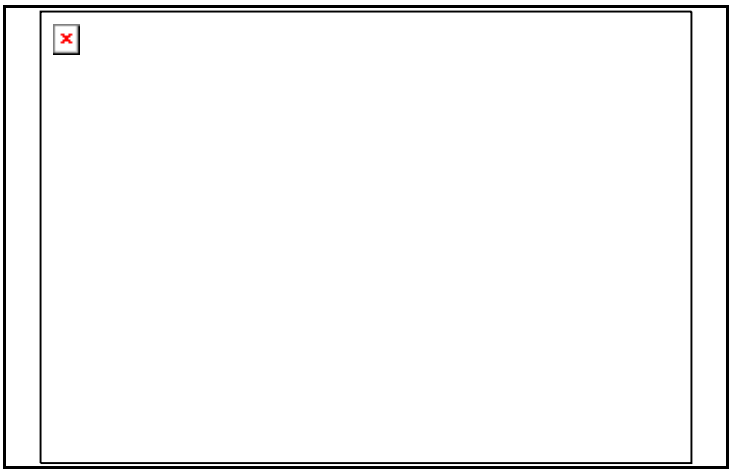
Insert the bushings into the radius arms and lightly lubricate the inside with heavy grease (silicone or moly base is best). Install the hub carrier onto the front radius arm. Loosely install the washer and castle nut.

Install the rear radius arm onto the hub carrier in the same manner. Slide the other (inside) end into the bracket on the subframe and temporarily secure with a bolt. Insert the $^{3}/_{8}$"USS x $^{5}/_{8}$"L bolts through the connecting plates. Tighten each castle nut to 15 lb-ft and back off to the nearest hole. Secure with a cotter pin.

Bolt the half-shaft inner ends and spacer onto each differential output flange. If you wish, install Jaguar shims with about .060" total thickness between the half-shaft and the spacer. This will make minor camber adjustments easier after basic alignment has been done.



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Install the coil-over damper onto the upper mount using a $^{1}/_{2}$" x 2 $^{3}/_{4}$"L bolt with flat washers and stover nut.

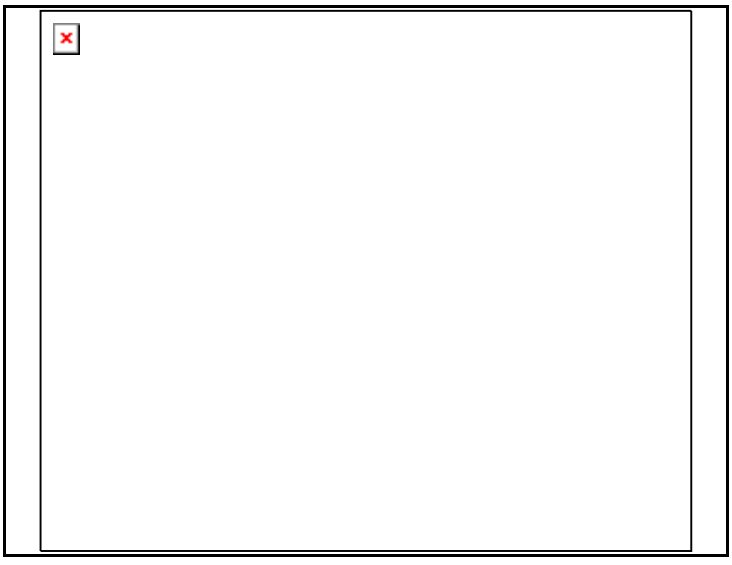
Connect the lower end of the damper to the front radius arm with $^{1}/_{2}$" x 2 $^{1}/_{4}$"L bolt. Use spacers on either side of the damper if necessary.

Install the anti-sway bar onto the rear of the subframe with $^{5}/_{16}$"-USS nuts, flat and lock washers as illustrated above.

Install the brake calipers, using M12 x 30mm Allen cap screws and wave washers. Bolt-on wheel hubs require spacers between the caliper and the upright. Pin-drive hubs need no spacer.

Attach the emergency brake cable as shown. You may have to make a slot in the bracket in which to insert the cable. See page 46. The cable is routed through the internal holes in the subframe and out the front to the balance bar assembly (page 102).

Connect the brake hose to the caliper.



Cob\man\b\caliper.jpg

After the suspension assembly is installed, fill the differential as described on page 149.

REAR HUBS

BOLT-ON WHEELS:

XJ sedan rear suspension units with original bolt-on wheels have a flange with a 5 x 4 3/4" pattern, matching the front Chevrolet hubs. If you are using an XKE rear drive with splined hubs for wire wheels, they must be changed to the sedan pieces. Call E.R.A. for the hubs. We've got take-offs in stock.

See page 140 for alignment specifications and procedure.

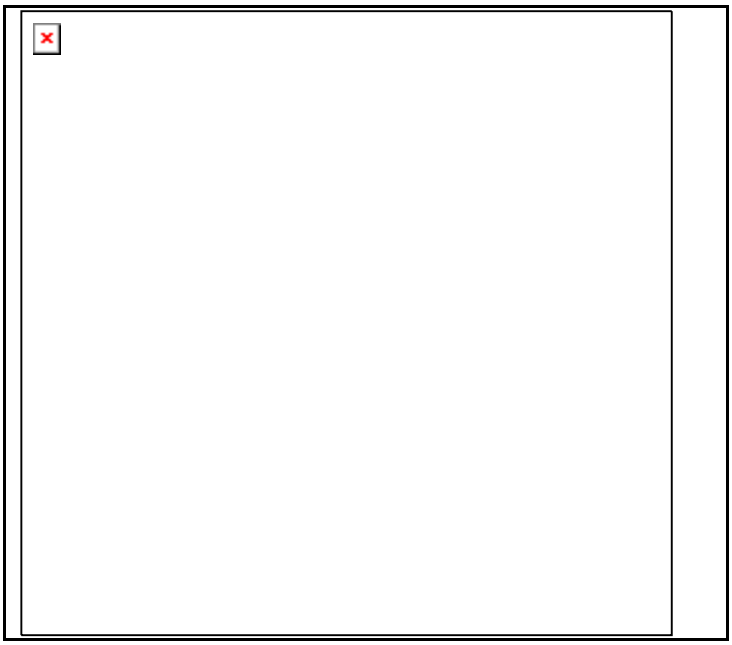
PIN-DRIVE WHEELS:

One-piece drive hubs (6 pin) are part of our E.R.A. pin drive option or available separately. They are installed in place of either style Jaguar hub.

SHIFT LEVER (FORD)

*E.R.A. has complete **reproduction shift levers** and **linkage** for those who don't want to do the modifications described below.*

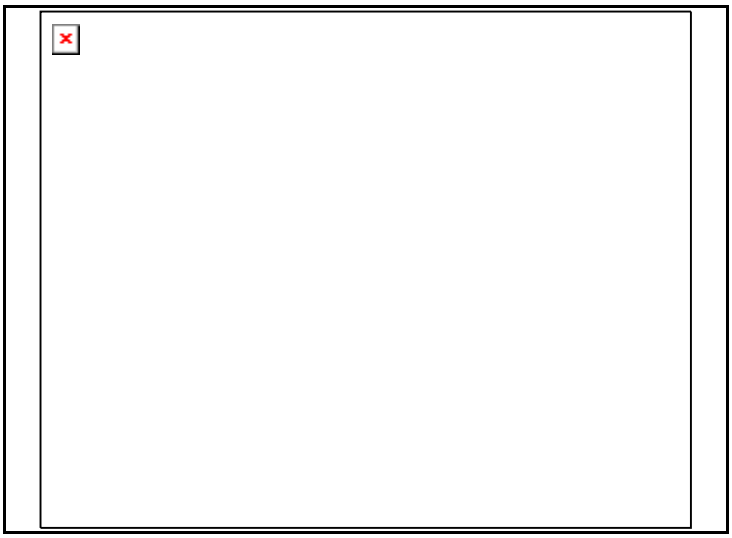
To duplicate the original Cobra's reversed shift lever, the Ford shift lever listed in Section A must be modified as shown below.



SHIFT1

Remove the knob and rubber mounting grommets from the lever.

Use an oxy-acetylene torch to apply as little heat as possible to melt the braze or silver solder attaching the actuating cable to the lock-out dog. When the braze or solder melts, a spring will pop the dog out.



Cob\man\b\shift2

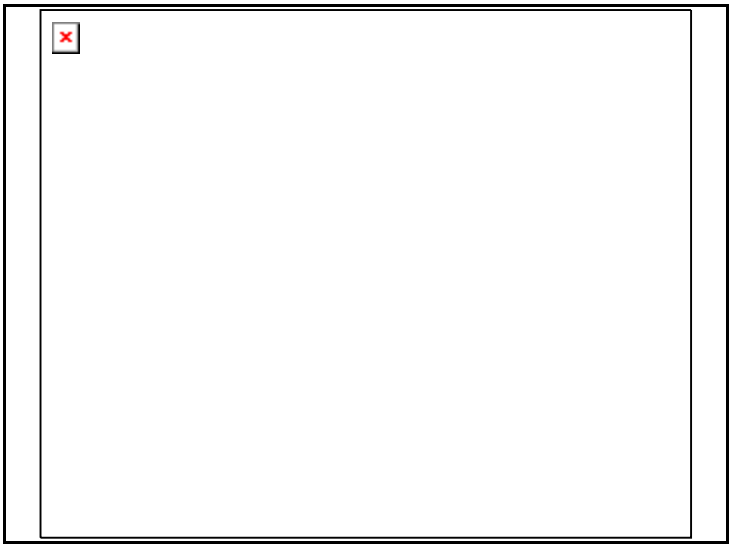
Save the dog, spring, and washer. Push the cable back up into the lever about 4 inches, but don't remove it completely.

Cut the lever as shown, removing approximately 2" where indicated. Chamfer both ends for welding.

The inside of the original tube was stepped for a washer that created a seat for the spring. When the lever was cut, that stepped section was removed.

To create a spring seat:

- Extend the cable through the end of the tube and slide a washer over it. Tack weld the washer in place centered on the tube. Be careful not to overheat the cable.



b\shift3

Clamp the base of the lever in a vise. Holding the lever in an 11 o'clock position, tack weld the lever to its base. Hold the lever so that it points forward as shown above. **Make sure** the slot for the lock-out dog in the base of the lever is on the right side with the lever pointing forward.

Weld the unit together using minimum heat. Don't let the cable slip down and out of the washer.

Place the lock-out dog in a vise and cut off the top portion as shown in "B". Remove any burrs in the cable hole.

The original spring must be replaced with one that is 1 $^{1}/_{2}$" long and approximately 8 coils per inch. Find one with the same tension as the original.

Cut the tip of the cable off the dog so that the cable can pass through the hole.

Slip the spring over the cable and into the lever. Insert the dog over the cable and into place in the lever.

Pull the cable tight through the dog. With a pair of vise grips, hold the dog in place approximately $^{1}/_{16}$" below the surface of its receptacle as shown. If necessary, have someone hold it for you. Braze or silver solder the cable to the dog.. Silver soldering is less likely to weaken the cable.

If brazing, use as small a flame as possible, holding the end of the brazing rod against the cable and dog. Direct the flame onto the end of the brazing rod, away from the cable. Avoid playing the flame directly on the cable..

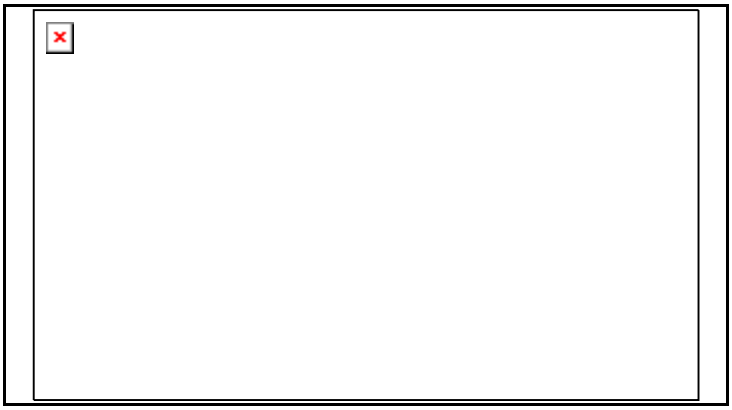
The heat necessary to melt the brazing rod will be directed onto the cable, allowing the brass to adhere to the cable. The lump of brass now on the cable will act as a heat shield while you now direct the flame against the dog until it is hot enough to cause the brass on the cable to flow and adhere.

Trim the cable close to the dog and grind down the brass and cable flush to the end of the dog. Grease the mechanism when cooled and replace the rubber grommets. For a more positive feel when shifting, replace the rubber grommets with pressed in steel sleeves.

Install the lever onto the transmission linkage.

SHIFT LEVER PLACEMENT

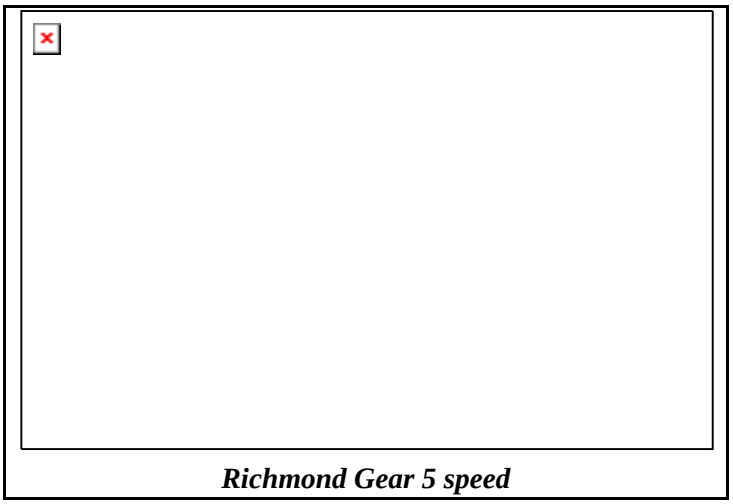
The shift lever should end up (relative to the bell housing) as shown below. E.R.A. has adapter plates to position a Hurst© unit correctly on the Top-Loader and the Richmond Gear 5 speed. See also page 15 for linkage locations on the Top-Loader trans.



B\shiftmt

RICHMOND GEAR 5 SPEED

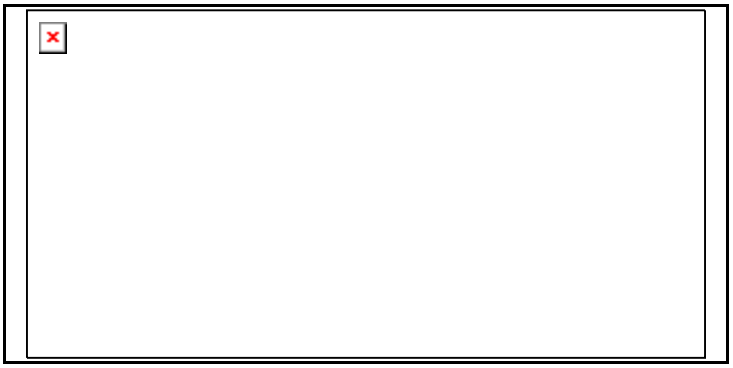
The Richmond gearbox uses an adapter and special handle (available from ERA) to move the shift lever to the proper location. The linkage shown is from Long.



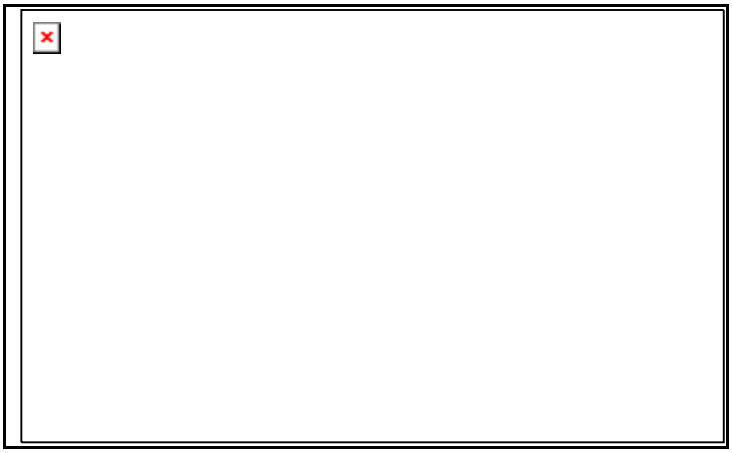
Richmond Gear 5 speed

TREMEC TKO SERIES

All Tremec transmissions keep the lever in the stock (full back) location to use the bent-forward shift lever available from ERA.



DRIVE SHAFT



b\drivshft

Trans⇒ Part ⇓	T.L., big spline, Tremec TKO	T.L., small spline, T5, Tremec 3500	Richmond gear
Rr Flange yoke	2-2-459	2-2-459	2-2-459
Rr U joint kit	5-153X	5-153X	5-153X
Rr Weld yoke	2-28-437	2-28-437	2-28-437
Frt Weld yoke	2-28-1697	2-28-1697	2-28-437
Frt U joint kit	5-213X (1330 Series)	5-213X (1330 Ser.)	5-153X (1310 Ser.)
Slider	2-3-6041X	2-3-5981X	2-3-9131X

*The **Tremec** driveshaft is 0.8" shorter than shown above, The Ford **T-5** is 1.8" shorter.*

*All part numbers are **Spicer** except as noted.*

E.R.A. stocks drive shafts for most Top Loader, Tremec and Richmond Gear transmissions. Alternately, you may have a shop specializing in power transmission equipment make one to your specifications. You must supply them with the appropriate transmission slip yoke and the distance from the differential flange to the tail shaft of the transmission.

Measure and check the distance from the face of the differential flange to the end of the transmission, including the seal extension. Subtract about $^{3}/_{4}$" for movement (note that some seals are accordion-like and designed to ride against the flange of the output yoke).

STEERING GEAR

See page 24 for part numbers.

The E.R.A. supplied steering gear does not require the preparation below. It is modified from a Flaming River gear. Parts to complete the modification are available from E.R.A.

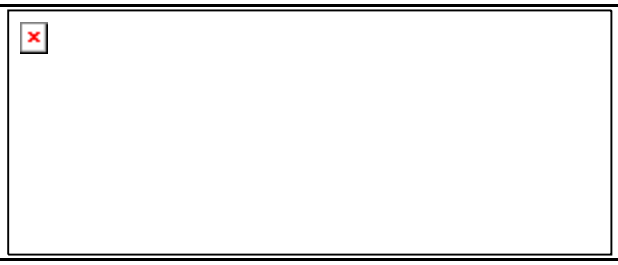
Remove the tie-rod boots.

Cut off the threaded end.

Weld (MIG is preferred) the ERA adapter to the remaining inner tie-rod.

Paint

Replace the boot and fasten with tie-wraps.

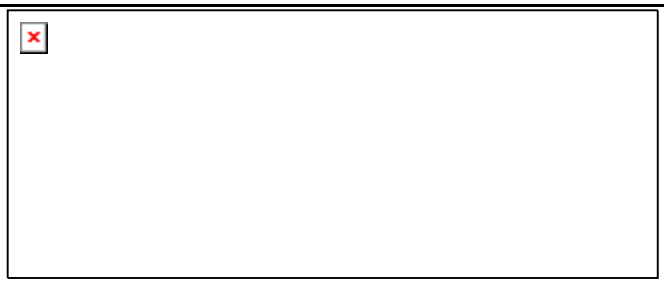


b\fr_gear_mod

STEERING COLUMN (UPPER)

You may use the E.R.A. reproduction column or the Triumph column listed on page 17.

BUSHING REPLACEMENT



The bushing consists of two parts: an outer rubber/steel insulator and a nylon sleeve.

- Make sure that the nylon sleeve is seated inside the insulator.
- Put a little grease on the inside of the housing to reduce the friction.
- Line up the retaining lugs and the hole, and push the pieces fully home.

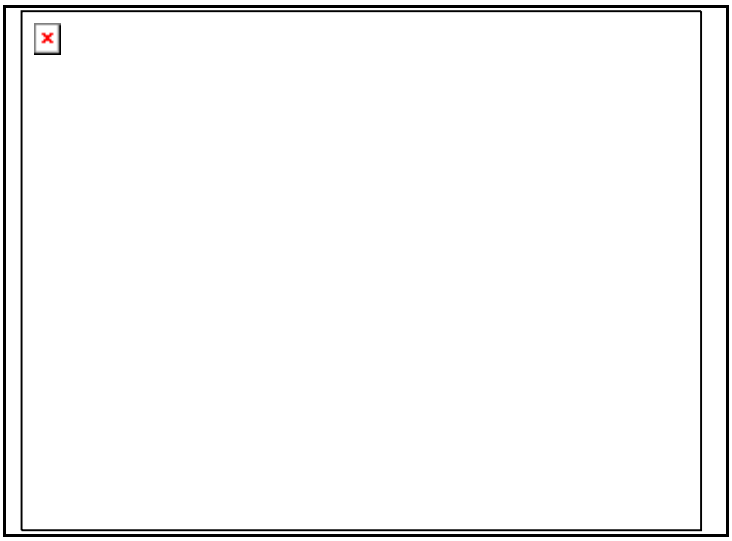
Remove the bushing by pushing the lugs in and toward the housing end.

When inserting the column through the assembly, be very careful that you don't push the sleeve out..

E.R.A. COLUMN

The E.R.A. column is ready for installation. No preparation is necessary.

TRIUMPH COLUMN



b\stcoltri

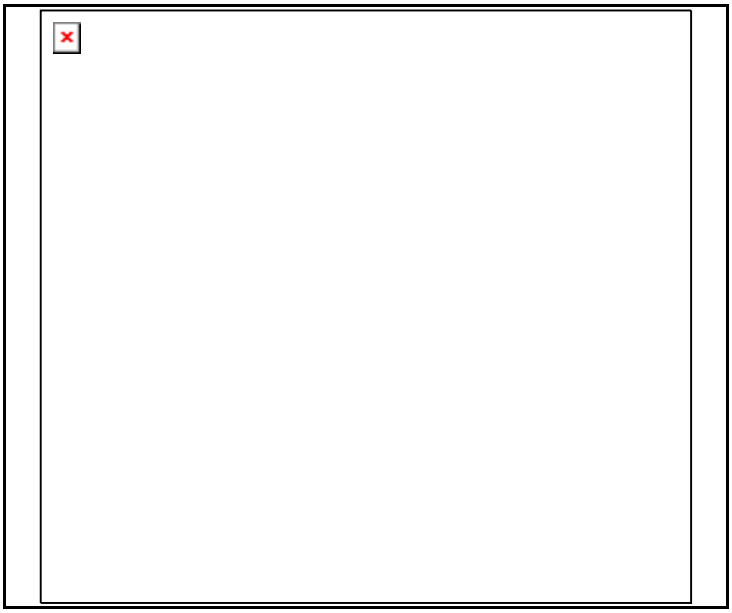
Remove the ignition switch/column lock. Two bolts hold the ignition switch unit onto the column, but their heads automatically snap off in assembly for theft proofing. They now look like large pins or dowels. Use a prick punch and small hammer to turn the bolts out, or cut a slot in them and use a screwdriver.

Replace the bushings if there is any side play in the housing. The column bushings are plastic within a steel and rubber collar. They have 2 nubs that lock into holes in the column housing.

- Remove the horn plate located inside the switch/hub housing by straightening the two metal tabs holding it in place. The plate may be discarded if you are going to use the dash mounted horn button.
- Remove the nylon washer and aluminum cap from the lower end of the column housing.
- Slide the column up and out of the upper (steering wheel) end of the housing as far as it will go.
- Trim most of the old upper and lower bushing nubs off with a razor or utility knife. Work the lower bushing out with a screwdriver by pushing in and down on the locking nubs in the side of the housing.
- Remove the column from the housing.
- Using a dowel just small enough to fit inside the housing, drive the upper bushing out through the upper end of the column from the bottom.
- Replace the upper bushing using the drift you used for removal. Lubricate the outside of the bushing with silicon, waterless hand soap, etc., before pushing into place.
- Slide the column back in place.
- Replace the lower bushing.
- Replace the horn plate if necessary.

Canceling cam

Before the Triumph steering column can be permanently installed, check that the signal canceling cam on the steering column shaft points toward the left when mated with the steering gear and middle column. Normally the cam will be oriented correctly if the flat on the column (where it mates to the intermediate column) is up.



b\canclcam

WIPERS

E.R.A. has wiper assemblies that can be purchased outright, or, if necessary, will modify your pieces on an exchange basis.

OVERVIEW

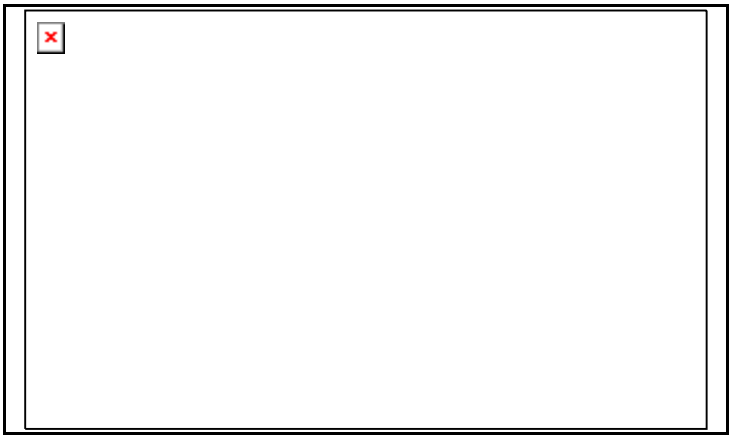
The original-style Lucas wiper motor and drive uses a spiral-wound **drive cable** that engages **gears** at each wiper arm. By driving the cable back and forth in a rigid housing, the gears and wiper arms rotate. The amount of rotation is determined by the stroke of the drive cable and the diameter of the wheelbox gears.

A switch in the motor that remains closed during 350 degrees of the rotation of the drive gear, automatically parks the wiper arms on the **right** side of the windshield after the dash switch is shut off. Some motors have the switch cam oriented incorrectly. Check the ***Stroke Changes*** section below for the correct orientation

Unfortunately, the best wheel boxes (listed on page 26) are rarely available. If your wheelboxes do not match the specifications on page 18, the crankshaft in the wiper motor may be modified to compensate. See ***Stroke Changes*** below.

For **electrical testing**, see the electrical troubleshooting guide.

CONNECTING TUBES



b\wiper3

Undo the large nut and remove the cable tube/wheelbox assembly from the motor.

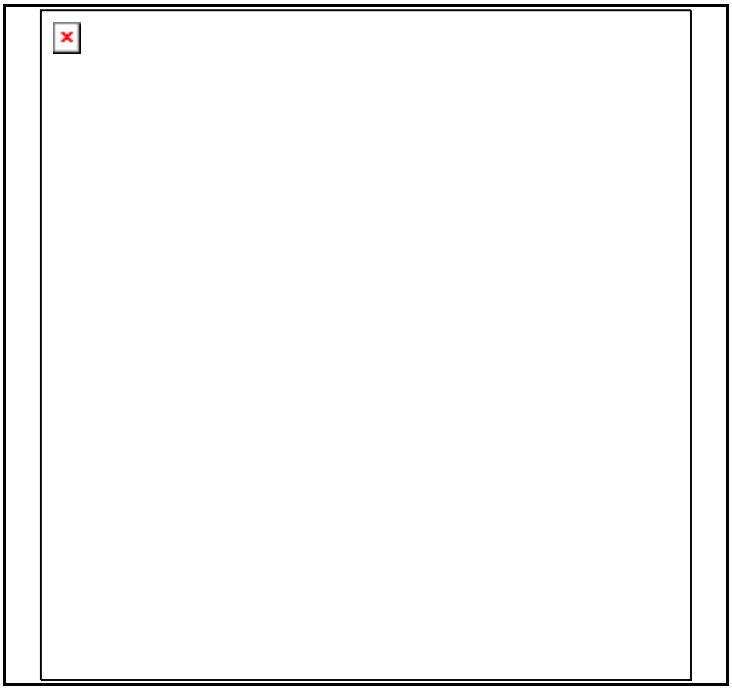
Remove the wheelbox backing plates and remove the tubes from the wheelboxes.

Using a tubing cutter or hacksaw, cut off approximately 2 3/4" from one end of the original tube between the right wheelbox and the motor. Save the nut and the piece of tubing. Use the short tube for the guide at the end of the second wheelbox.

Slide the nut onto tube shorter tube supplied (the one with just one end flared).

Flare the end of the tube with the nut. Slide the drive cable through the tube. If the cable is tight at the new flare, use a 1/4" drill bit to "clean" the inside of the tube.

MOTOR PREPARATION



If you are sure that the wiper motor functions correctly and don't want to disassemble the wiper motor itself, skip steps 4 through 8.

Take out the 4 screws holding the **cover** to the gearbox, and remove the cover.

Remove the **circlip** and **washer** from the connecting rod big end, and remove the connecting rod. Note the bottom washer.

Remove the circlip and washer from the back side of the crankshaft, and push out the crankshaft from the housing. Retain all the parts! Note the **thrust washer** on the inside of the crankpin.

Mark the relative position of the round motor housing to the aluminum gear reduction housing. Remove the two long screws holding the motor housing to the frame. Separate the two (with gentle soft hammer taps if necessary). Do not lose the felt washer and thrust washer in the bearing cup at the bottom of the housing.

Inspect the **brushes** for wear or sticking, the commutator for excess wear and arcing, and the lower bearing. Clean the parts with a solvent if necessary. Work the brushes in and out to insure free motion.

Install the **armature** carefully into the gear housing until it contacts the sides of the brushes. Using a hook shaped wire or other appropriate tool, retract each brush in turn so that the commutator can slide past the edges of both brushes and continue into the gear case

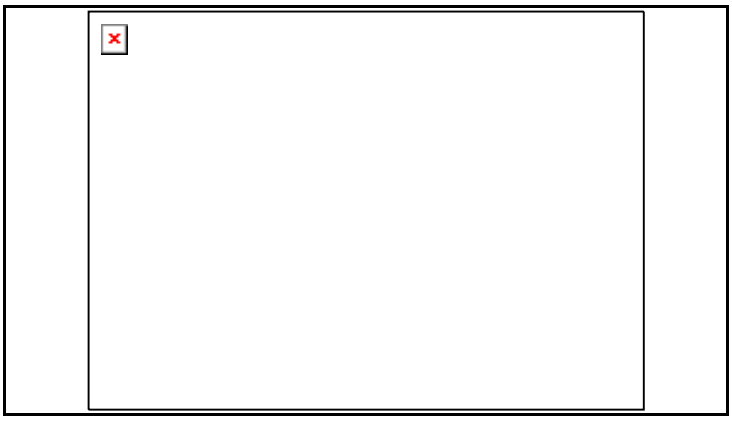
Put 1 or 2 drops of oil in the lower bearing of the armature housing. *Excess* oil will contaminate the brushes later on.

Install the **armature housing**, aligning the marks on the housing and the frame. Reinstall the long retaining screws.

STROKE CHANGES

Remove the plastic gear from the crankshaft by supporting the edge of the gear and tapping the shaft with a soft hammer. Be careful not to damage the circlip groove.

The **position of the crankpin** must be changed in order to increase the stroke of the cable: Punch the underside of the crank plate exactly opposite the center of the crankpin. Use a 3/8" Blair spotweld cutter to cut the pin from the plate, drilling from the back side at the punch mark. The pin will be removed, together with a small piece of the plate.

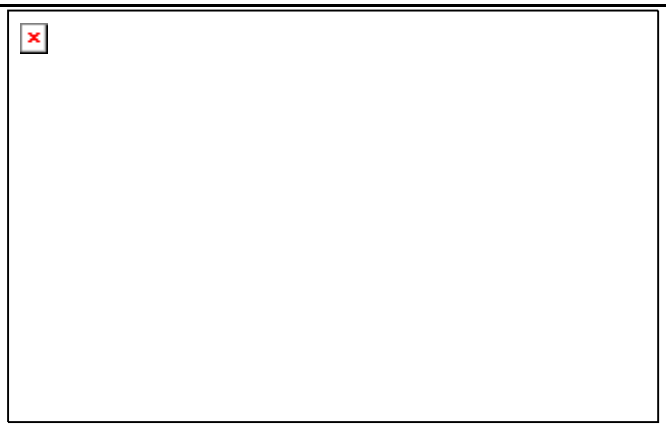


b\wiper2

Drill a $^{17}/_{64}$" hole in the opposite side of the crankplate at the position indicated in the illustration. **Countersink** from the crankpin side just enough that the crankpin will be flat on the plate after insertion into the hole.

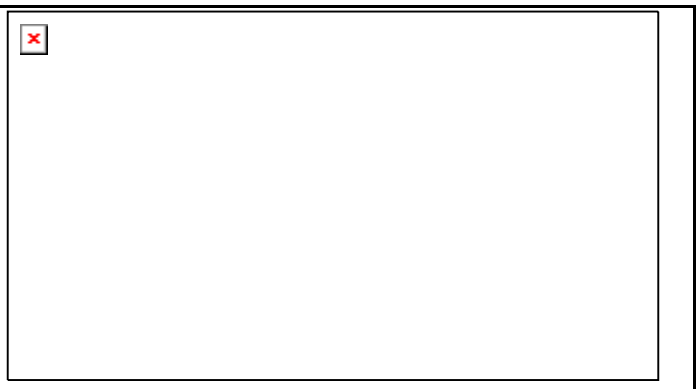
Weld or braze **the pin** in the new hole from the back. Clean and deburr the crankshaft.

Install the **plastic gear** onto the crankshaft, engaging the tangs of the gear into the crankshaft notches. The orientation of the plastic cam is dependant on which footbox your wiper motor is mounted.



Wiper mounted on the passenger's footbox.
The pin is adjacent to the parking cam.

b\wipgear



Wiper motor mounted on driver's footbox.
The pin is opposite the parking cam.

Grease the shaft lightly, install the conical thrust washer, and insert it into the housing. Install the outer thrust washer and circlip.

Trim the cable so that it measures 38" from crankpin hole to the end. Since the wire material is very hard, it must be done with an abrasive wheel or bolt cutter.

Partially fill the gear housing with grease, and place the cable into the guide. Some guides are integral; others have separate plastic liners. Install the connecting rod with its thrust washers, and the connecting rod circlip.

Install the **cover plate** with 4 screws.

Instructions for **wiper motor installation** are on page 77.

DAMPERS AND SPRINGS:

*If the car seems **too high** when first lowered to the floor, don't panic. The car will settle a bit after driving.. The spring specifications below have worked for us consistantly.*

The E.R.A.-Jaguar subframe requires XKE Series I or II dampers. Height adjustable dampers are available from E.R.A.

DAMPERS

SPECIFICATIONS

Position	Damper Extended Length (eye to eye)	Compressed Length (with rubber compr'sed)	Spring length	Spring Rate * (lbs/inch)
Front	17.5"	12.1"	12" (Spax)	250
Rear (Jag) Stock XKE	13.3"	10.1"	10"	250
Spax w/o height adj.	13.3"	10.1"	10"	350
Spax with height adj.	13.3"	10.1"	8"	350
Rear (ERA Design)				
Spax with height adj.	14.5”	10.5”	9” x 2.25”ID	450

*The spring rate is either on a tag or etched on the end of the spring.

If you use a different brand coil-over, do not exceed the extended length by more than 1/4".

FRONT SPRINGS

Because of small variations in the free length of new springs the installed height in the damper may vary slightly. Use the **preloads** at the right to calculate the spring installed height.

b\spring

Measure each spring and subtract the values below for the installed height in a fully extended damper.

PRELOAD

APPLICATION	LEFT	RIGHT
Big Block		
275lbs/in.	.9"	1.1"
250 lbs/in	1.1"	1.3"
Small Block		
250 lbs/in	.5"	.7"
225 lbs/in	.8"	1.0"

Dimensions above apply to **Spax dampers** only.

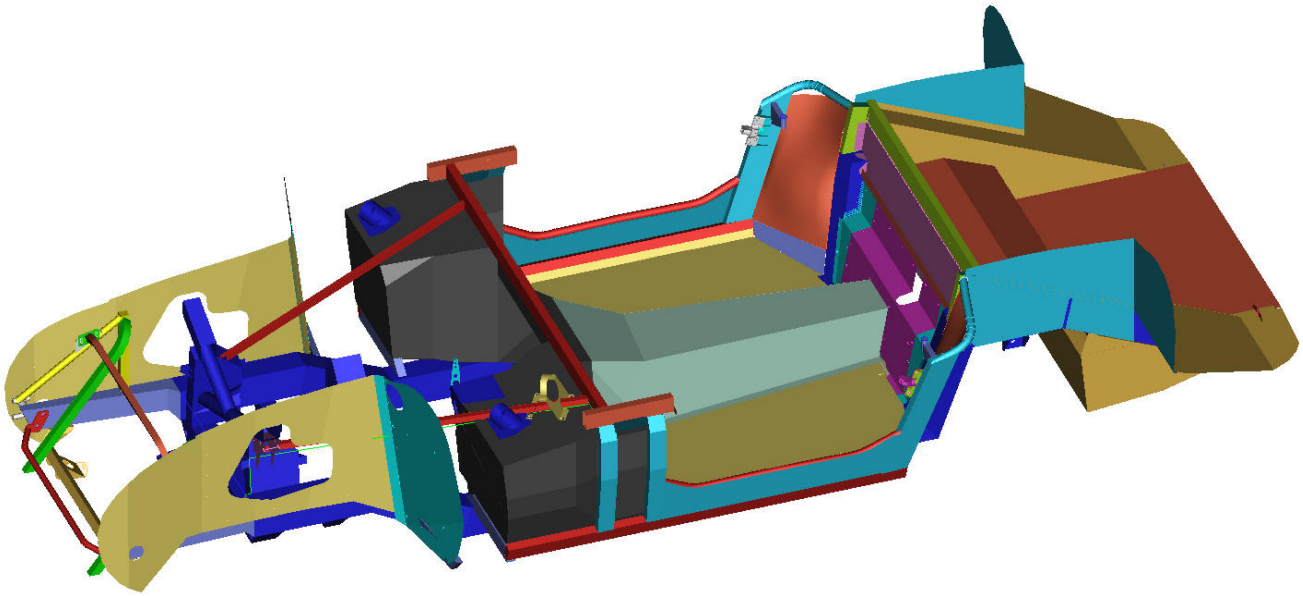
Because component weight may vary from car to car, final adjustments to determine the correct ride height should be made after the car has been driven a short distance to settle the springs. See page 139.

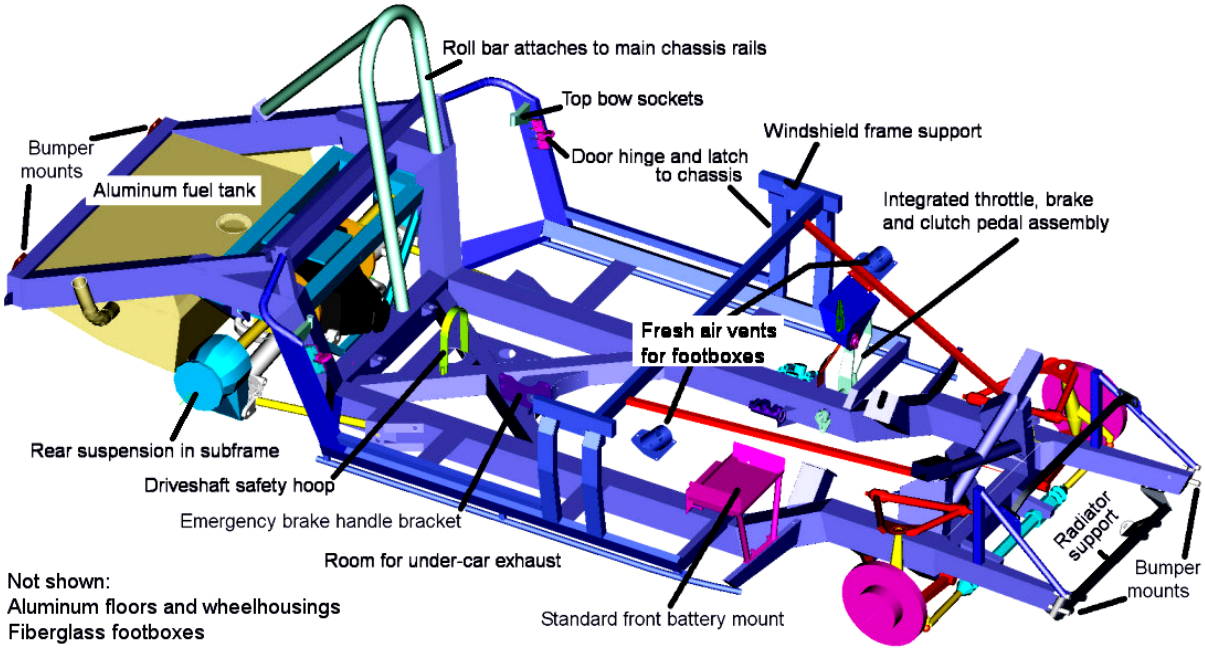
REAR HUBS, BOLT-ON WHEELS:

To accept bolt-on wheels, Jaguar XJ hubs must be used. They have a flange with (5) ½-20 studs.

SECTION C:
CHASSIS PREPARATION

Assembling the chassis and preparation for paint




Roll bar attaches to main chassis rails
Top bow sockets
Windshield frame support
Door hinge and latch to chassis
Bumper mounts
Aluminum fuel tank
Integrated throttle, brake and clutch pedal assembly
Fresh air vents for footboxes
Rear suspension in subframe
Driveshaft safety hoop
Emergency brake handle bracket
Room for under-car exhaust
Radiator support
Bumper mounts
Standard front battery mount
Not shown:
Aluminum floors and wheelhousings
Fiberglass footboxes

Body pre-mounted on chassis option

Most of the time-consuming items listed in this section are already done, although it couldn't hurt to check critical fasteners. You can skip all the Section C items except removing the windshield, bumpers, lights and fuel filler cap in preparation for paint.

BODY REMOVAL

The body must be removed to paint the chassis, but is not necessary to remove the body from the chassis to paint the body. All E.R.A. turn-key cars are painted **with the body already bonded to the chassis**, but without mechanicals installed. This requires careful masking to minimize overspray, but guarantees good body panel fit. **Installation of all the mechanical components is easy with the body on the chassis**. It is, in fact, much **harder** to install the body over the mechanical components.

When doing any disassembly, note any adjusting shims and their location. Mark each for reassembly.

DOORS, HOOD AND TRUNK LID

Note the location of the hinges and the number of shims for all pieces.

Remove the door hinge covers.

Remove the doors, hood, and trunk lid from their hinges. Note that the basice kit is shipped with short pieces of half-round rubber taped to the door openings. This is put there to prevent rattles and wear when the car is shipped. You may discard the rubber, etc. Lengths of new gasket are included in the parts boxes shipped with the kit.

Remove the door hinges and metal closing panels behind door hinges.

Remove the hood and trunk hinges, noting their location. "L" and "R" are stamped into the hood hinges. The trunk hinges are the same from left to right and are stamped with "T".

BUMPERS, BUMPER BRACKETS:

Front: If you have the optional nudge bar(s), detach them from the overriders.

Remove both fresh air inlet ducts and screen from the front body.

Remove each bumper/tube assembly from its mounting point. The upper nut is accessible from inside the nose. The lower nut is accessed through a hole in the inner splash panel.

Rear: Unbolt the bumpers from their mounting brackets (upper bolt) and chassis (lower bolt). The nuts on lower bolt are reached through the access holes on the bottom of the rear chassis cross member. If nudge bar is fitted, remove as a unit.

ROLL BAR:

Remove the center access panel from the rear bulkhead. See page 83.

Remove the bolts from roll bar brace, one at each leg, and at the top and bottom end of the rear brace.

Remove the shim washers from the lower end of the brace and slide the brace down to disengage the upper slip joint.

Pull the roll bar hoop up and out from the chassis.

Remove the rubber grommets from the body.Doors, etc:

Remove the filler panel below the door opening.

Remove latching hardware from the main body, including the hood firewall latches..

Remove the aluminum interior panels that are below the door openings and the aluminum firewall.

RADIATOR AND SHROUDING:

Remove the (optional) oil cooler and shrouding. See page 90.

Remove the (optional front fan assembly. See page 89.

Remove the rear fan on its bracket. See page 88.

Remove the side and lower shrouding (3 pcs.) from inside the grill opening.

Remove the upper radiator mounting tab and gently lay the radiator back against the chassis. Soft paddling will help insure that nothing is damaged.

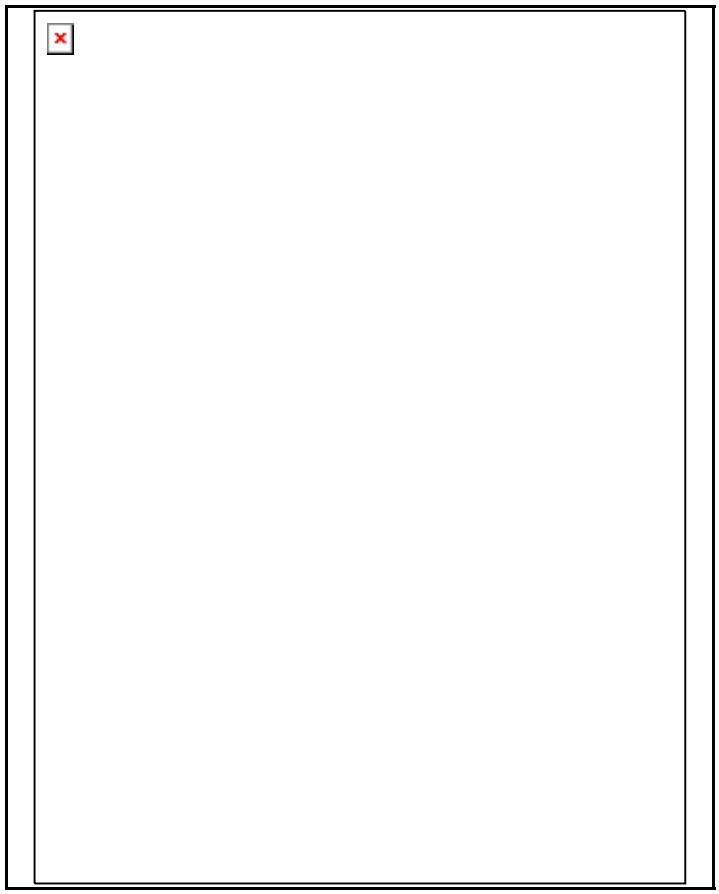
Remove the top radiator shroud. See page 88.

Remove any cotter pins and washers from the bottom radiator pins and carefully slide the radiator up and out of the car through the hood opening. The radiator can also be removed from the bottom in unit with the bottom mounting bracket.

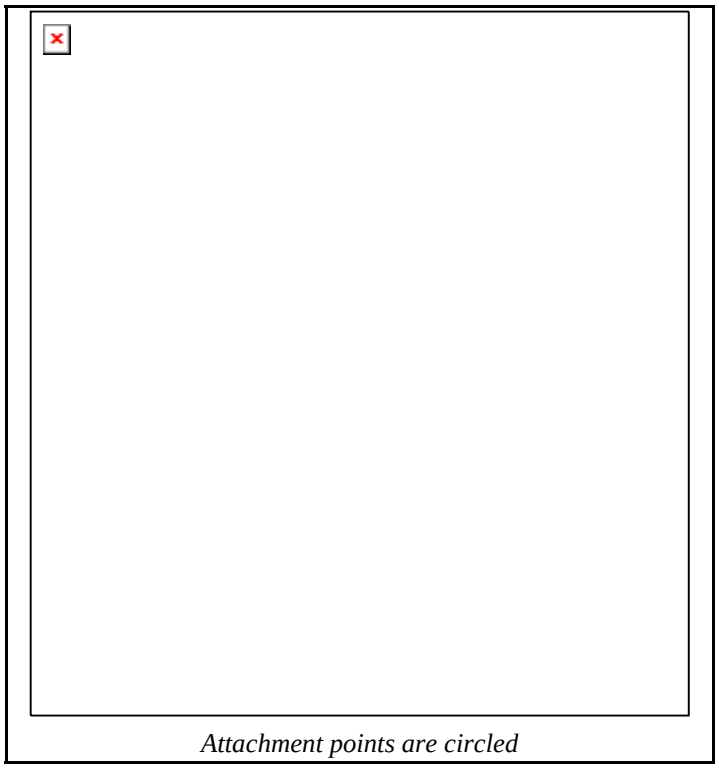
FRONT INNER PANEL REMOVAL

Remove the fresh air hose from the front intake manifold. Disengage the retaining clamps and pull the hose rearward into the engine compartment.

Remove the wheelhouse access panel at the rear.

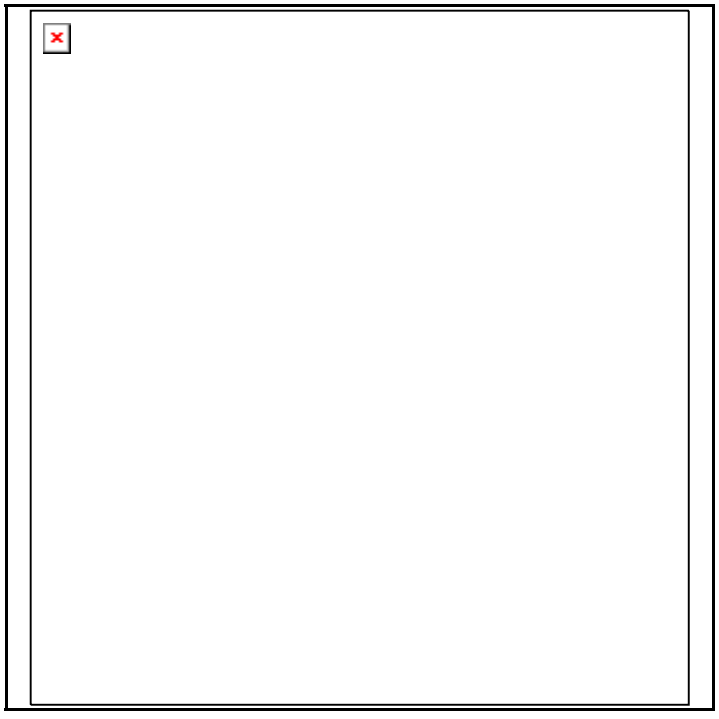


Remove the front wheelhouse panel. It's attached with screws or rivets to the main chassis rail as shown below to the vertical support, fiberglass inner panel (top) and where it meets the middle panel.



Attachment points are circled

Remove the screws that attach the middle panel to the chassis and the bonded tube at the hood-opening return edge.



The following panels are held in place with screws (standard kit) or are bonded and riveted with the Bonded-body option.

DASHBOARD AND GLOVE BOX:

Remove steering column if fit, page 112.

Remove the 5 chrome screws and trim washers securing the dash panel. If the dashboard wiring is already connected to the main harness, disconnect the multi-plug connectors and the connection at the ammeter. Remove the dashboard and store on a soft surface.

If the car is already assembled, also disconnect the air control cables, the water and temperature bulbs, and the oil pressure line going to the cngine. For simpler operations, you can pull the dash rearward without disconnecting those things.

Remove the screws securing the glove box to the firewall.

WINDSHIELD:

Don't lose the screws *for the center bracket, windwings or sun visors. They have special British Whitworth threads, and are hand-trimmed to length. You can't get them at your local hardware store (unless you live in England, anyway.)*

(See page 107 for details) Before removing windshield, mark the location of the center windshield bracket on the body with a sharpened piece of stiff wire or a scribe.

Remove the two small screws from the windshield post trim plates on both sides of the windshield.

From under the cowl, remove the 4 bolts holding the windshield to the car, make note of any shims.

Slide the windshield up and out. Store it in a protected place. For installation, see page 107.

GAS CAP, FILLER PIPE

See page 93 for diagram.

Loosen the hose clamps on the rubber connector between the tank and the filler flange. Remove the hose.

Unscrew the cap from its mounting flange. Keep the shims and/or gaskets found between cap and mounting flange. The threads are coated **with anti-seize grease**. If you have to remove the coating, it **must** be replaced before reassembly. Without it, the parts may gall together permanently.

Slip the lower ends of the vent and drain hoses (attached to the mounting adapter) out of the holes in the lower trunk/fender closing panel.

Remove the screws holding the cap and mounting adapter on the underside of the fender. Remove the flange and hoses.

Final fastener removal

Locate and remove the screws (save them please!) holding the body to the chassis from the:

- Bottom edge of the rocker panel
- The interior side of the firewall where the firewall attaches to the steel cross member.
- Also remove rear wheelhouse closing panels from inside both rear wheel wells. These panels are the ones that close off the wheel area from the passenger compartment.

LIFTING THE BODY OFF

Two people per side are required to remove or replace the body from the chassis.

Gently spread the body sides out, working the rocker over the sill tube and the door hinge mounts.

After removal, support the body on a flat surface so that there is no stress on the rocker panel area under doors.

CHASSIS PAINT

If chassis is not already powder coated from E.R.A. (optional), all the remaining parts on chassis must be removed:

- Brake cylinder/ pedal cover box and pedal assembly. Cover or remove the pedal shaft needle bearings in chassis before priming or sand-blasting chassis. Refer to page 103 for pedal assembly details.
- Brake master cylinder cover, floors, , footboxes and brake lines
- Radiator lower support bracket. Remove the nuts on the bottom of the front chassis extension. See page 88.

The footboxes, floors, transmission tunnel and rear bulkhead panel are temporarily located and secured with sheet metal screws. Save the screws for use later in aligning parts for installation.

- Remove the accelerator pedal assembly, fresh air control valves, brackets, etc. from the foot boxes.

Coat the chassis, brackets, pedals and brake cover, suspension components, etc. It is not necessary to paint the aluminum panels.

Clean all parts with wax and grease remover.

Etch metal with "Metal Prep", or by sandblasting.

Apply a primer coat appropriate for your paint. If possible use non-sanding epoxy primer.

Paint the chassis and other parts with epoxy or a two-part polyurethane paint such as Dupont Imron or Ditzler Deltron.

When the paint is properly cured, support the chassis on padded jack stands at least 18" off the ground at the rear cross member. This is the minimum height required for installing the rear suspension

SECTION D:
BODY/CHASSIS ASSEMBLY

Assembly of the body and basic mechanical components.

FASTENER NOTES

Almost all the locking nuts in the kit are **Stover** style. Stovers are re-useable several times, unlike the nylon locking type. **However**, you must use **light oil** on the threads when assembling.

General fastener **torque specifications** are listed on page 151.

BODY MOUNTED PRE-MOUNTED ON CHASSIS OPTION

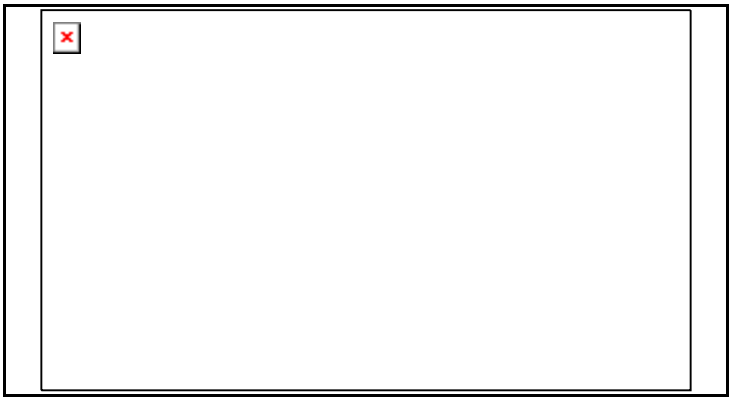
Many items listed in this section are already installed, although it couldn't hurt to check critical fasteners. You can skip the following items:

- Brake and fuel lines
- Horns
- Floors
- Footboxes
- Bonding strips
- Footbox components
- Battery mount

BRAKE AND FUEL LINES

Replace the **brake** and **fuel lines** on the chassis, securing the lines in place with the plastic clips and Tek© screws. Seal the thread holes with silicone to prevent rusting.

Bolt the **brake master cylinders** in place as shown below. The feed lines will be installed later.



d\mastcyl

The **clutch** master cylinder is shown on page 137. The **balance bar assembly** is shown on page 143.

HORNS

Bolt the horns to the front side of the front "X" member. See locations on page 96.

FLOORS

Place the floor panels in position and hold them in place with the screws used for shipping.

Using the holes in the aluminum for a pattern, drill $^{9}/_{64}$" holes through the chassis rails. Also, drill holes through the flanges where the floor rests on the "X" member. Remove the floors and remove the drilling chips.

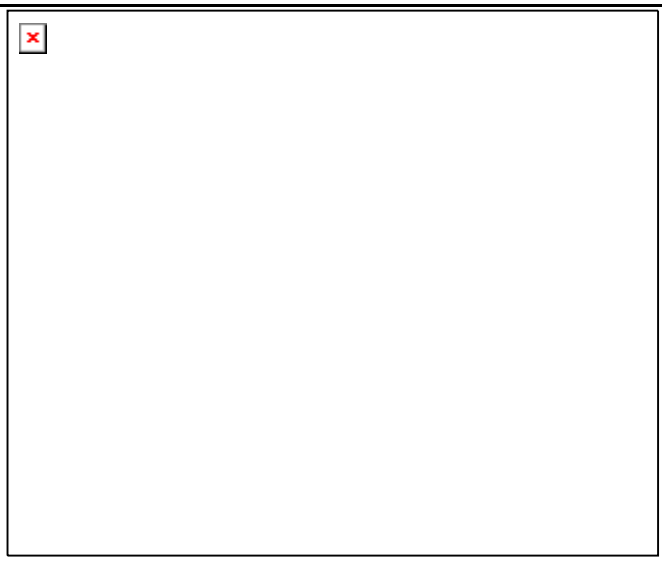
Using a caulking gun and high quality auto body seam sealer or a silicone base sealant, run a bead of sealant on all the frame surfaces the floor will contact. Don't skimp, you don't want any gaps where water and dirt can accumulate.

Place floor panels into place and rivet with $^{1}/_{8}$"x $^{3}/_{8}$" aluminum or stainless steel rivets. Press the floor down while riveting to ensure a tight fit.

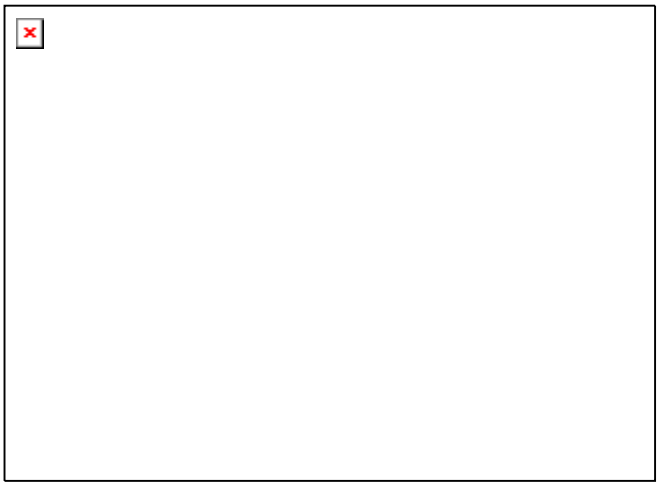
Check for gaps between the floor and the chassis and fill them with more sealant if necessary. From under the car, smooth out any excess sealant that has squeezed out.

FOOT BOXES

Before permanently installing the footboxes into the chassis, apply the supplied insulation as shown. The edge strips are not absolutely needed but make the installation neater and keep the edges from curling back over the long term.



Front - Passenger Footbox



Inner – Passenger Footbox

Front – Driver's Footbox

Side – Driver's Footbox

D\footbox

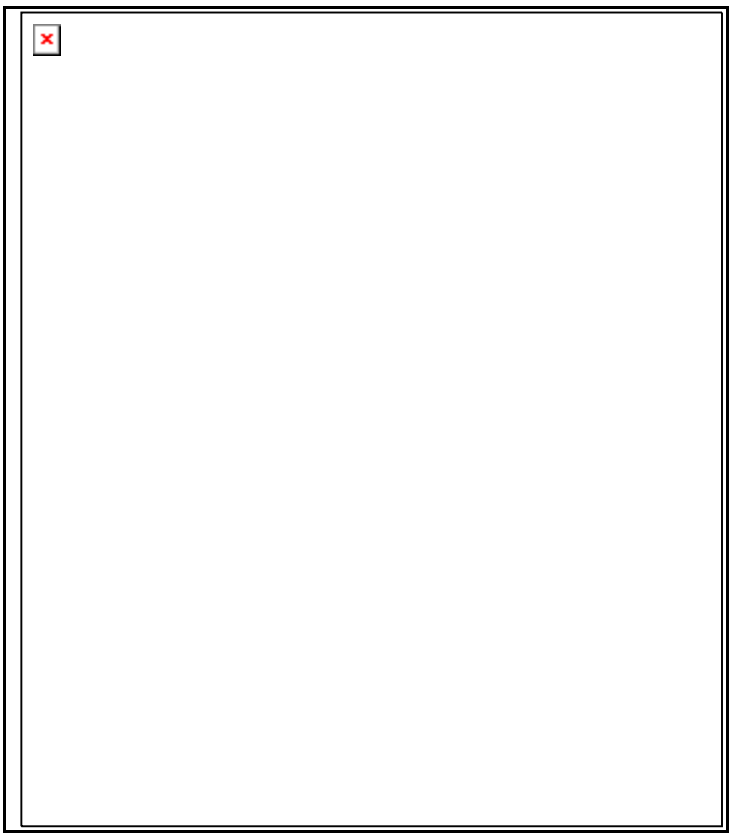
Use a small amount of sealer under the areas with rivet holes. Lift each footbox up and slip in from the center of the car towards the outside. Match the holes in the fiberglass to those in the chassis

BONDING STRIPS

Special fiberglass angles are used between the inner panels and the latteral steel tubes (see above). Attach with sealant and rivets. The short strips attach to the upper side cowl support tubes and the longer strip to the top of the rear cowl support tube.

Position the short bonding strips at least $^{3}/_{4}$" back from the front cowl transverse tube (leaving room for the firewall that will be bonded later.) Rivet through the **sides** of the strips only.

FRESH AIR CONTROL VALVES



d\lftair

Screw on top of the foot box after putting a bead of caulk on the bottom flange.

Clamp the duct hose onto the valve. The actuating cable will be attached later.

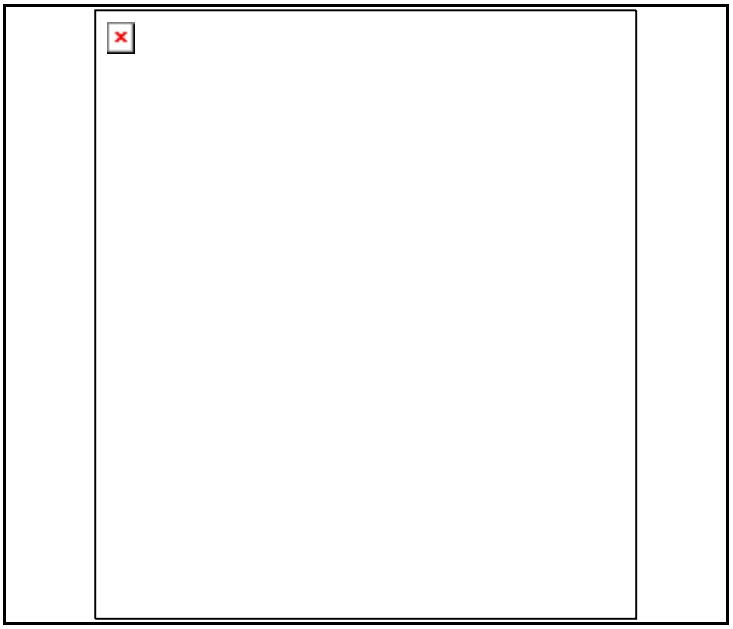
Use a wire tie to **secure** the hose to the bracket on the inside top of the fender.

THROTTLE LINKAGE

Mount the pedal assembly onto the footbox. See page 86 for details.

ID PLATE

Install the ID plate with $^{1}/_{8}$"diam. x $^{3}/_{8}$"L aluminum blind rivets as shown.



d\idplate

More chassis and body ID numbers

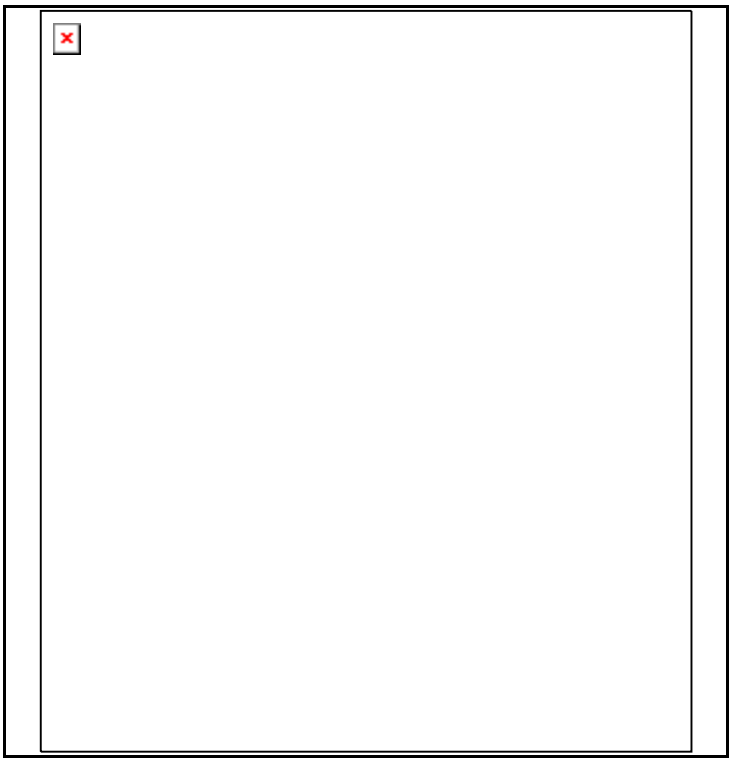
*The **chassis** is stamped with the ID number in three places:*

- *The left front X member, inside the top shock mount.*
- *On the transverse tube behind the engine(usually covered by the aluminum firewall panel. On the outside of the frame just inside the right rear tire.*

*The **body** is marked inside the hood opening, on the left return lip about a foot from the front of the opening.*

BATTERY TRAY

(Pre-installed) The standard front-mounted battery is bolted in place onto the front of the right foot box and to the top of the front outrigger. It's pre-installed on every chassis, so the holes are already in place.



d\battery_mount

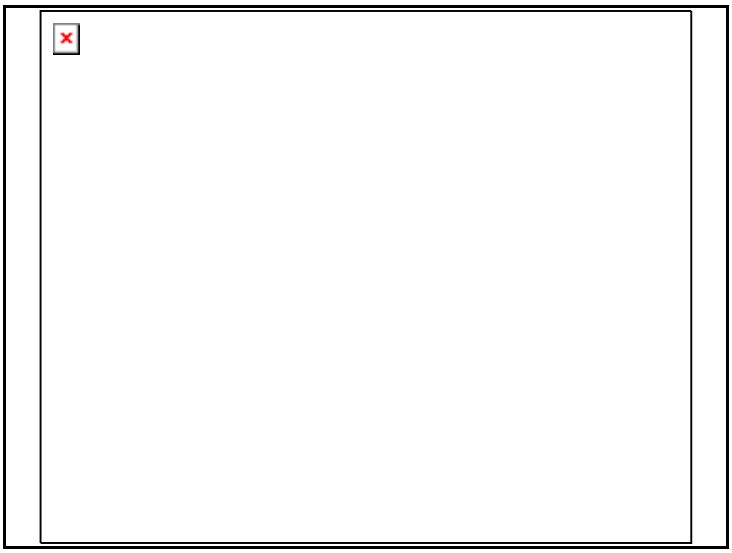
BATTERY REMOVE AND REPLACE

The engine-compartment-mounted battery is accessed by removing an access panel at the rear of the right front wheel.

- Remove the hose from the fresh-air valve.
- Note that the top panel screw and the three lower screws are removed from the engine-compartment side and the lower screws from inside the wheel well. The bottom edge is secured to the chassis outrigger with sheet metal screws.

VOLTAGE REGULATOR

The regulator (part number on page 26) installs with #10 sheet metal screws bolts on top of the left foot box into captive speed-nuts.



d\voltreg

BRAKE/CLUTCH FLUID RESERVOIR

***Note**: The rubber hose supplied by E.R.A. is compatible with brake fluid, but most other types are not. Use caution if you choose to replace the hose.*

Bolt the BMW reservoir and its mounting bracket to the driver's wheelwell as shown. Connect the reservoir to the hardlines with the hose supplied. Use clamps to secure.

BODY MOUNTING

***Preparation Is Everything! Before starting**, have all tools and materials ready and read the text below.*

All the aluminum splash and trunk panels must be removed before the body shell is installed. Once the body is bonded at the areas indicated (except for the nose opening), the front inner panels must be installed in the pre-drilled holes to locate the nose support bar.

Clean and rough the tops of the chassis at the areas indicated.

Remove the front body mount.

With assistance, raise the body over the chassis. Lower the front so that the bottom lip goes over the front chassis horns.

Carefully spread the body sides while slipping the lower body edges over the cowl support side tubes. Lower the body down over the cowl supports and onto the chassis. Use small blocks of wood, etc. to keep the body at least 2" above the bonding strips and chassis.

Loosely install the front body mount.

Attach the aluminum front wheelhouse panels to the body tube, either with several Clecos©, rivets or small screws. When the body is lowered, the bottom holes in the aluminum must line up with the holes in the chassis.

Mix a trial batch of bonding adhesive (see “Supplies and Materials" on page 29) to check the set-up time before you start. You must have enough time to apply the adhesive and carry out the all the subsequent installation steps before hardening. Use less catalyst or hardener to increase working time.

Use a caulking gun to apply body sealant (also used on the floors and foot boxes) to the chassis and corresponding body parts labeled C including the rear-most lip of the upper trunk panel, except:

- The bonding strips
- The rocker panel longitudinal mounting tubes
- Edges of the upper trunk panel that the body will contact.

Apply the bonding adhesive between the surfaces indicated on the diagram.

Remove the spacer blocks between the body and chassis, lining up the original screw holes used for shipping. Refasten the rocker panels, firewall, front wheel house panels, trunk floor on rear crossmember.

While the adhesive is still soft, install the #2 front inner splash panels with a few rivets or screws to establish the front body height. See page 57 for details.

Install the nose support to establish the left/right location for front body

Smooth out any excess sealant, at the same time sealing gaps where water and dirt could accumulate. Wipe off excess bonding material from all joints, and clean up with lacquer thinner or acetone, taking extra care near painted surfaces.

Use $^{1}/_{8}$" aluminum or stainless steel blind rivets to complete the body attachment. Drill $^{9}/_{64}$" holes through the guide holes in the following panels into the chassis, and rivet body to the chassis:

- Front inner wheel house panels ($^{1}/_{8}$" rivets) and the triangulated sections at the rear of these panels.
- Drill holes (but don't rivet yet) in the rocker panel attachment flanges.

- The firewall where it mounts onto the steel crossmember.
- The overlapping joint between the upper and lower trunk panels.
- The lower trunk panel where it rests on top of the rear crossmember and along the slopped frame rails on each side, $^{3}/_{16}$" holes only. See above.

With the door shut, the rear edge must be adjusted **parallel** to the body opening `from top to bottom. Hold the door so that the top edge matches the body. If the bottom edge of the door does not match, adjust the rocker panel, either with shims or by bending the steel attaching flange on the chassis.

Use a block of wood and a hammer to bend the flange. Don't strike the fiberglass directly. If necessary, bend the flange in further than necessary with a block and bend or shim back the necessary amount.

When the doors fit well, permanently attach the rocker panels. Run a bead of sealant in between the flange and the rocker edge with a caulking gun. Rivet the rocker panels to the chassis. Use one or two clamps as you move along riveting to insure a tight fit.

.If the car is already painted and the rocker attaching flange is painted semigloss black, touch up the rivets with the semigloss black.

REAR CLOSING PANELS

Install the panels that seal the rear wheel area from the passenger compartment with sealant and rivets.

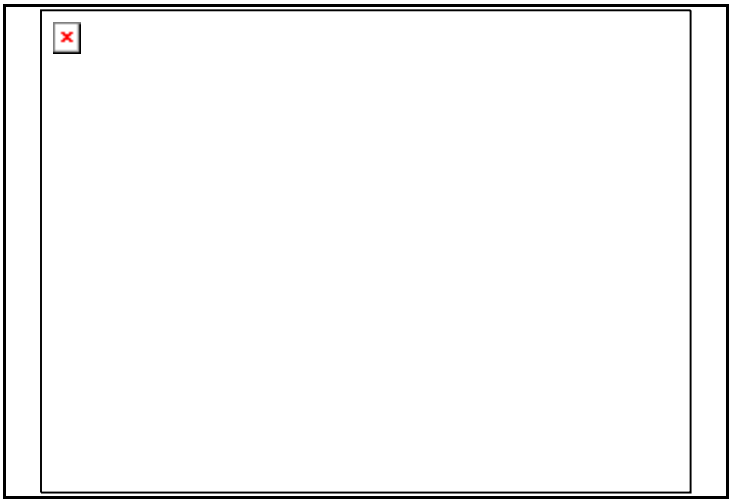
Hold the panels in place with the original screws and drill ($^{9}/_{64}$" holes) for $^{1}/_{8}$" rivets into the chassis tubes. The closing panel should not contact the outer body. If necessary, trim the edge for a $^{1}/_{8}$" to $^{3}/_{16}$" gap. for the weatherseal.

Once the panel is in place, smooth silicone or urethane sealant over the outer fender/filler joint, covering all the way to the bottom corner.

HOOD

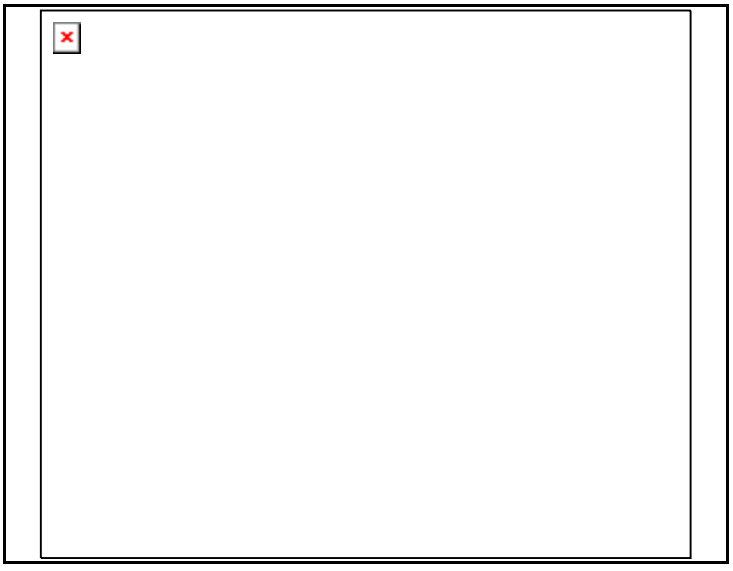
(Pre-installed) Bolt the hinges loosely into the body from inside the grille opening. The hood hinges are marked **L** and **R**. The trunk hinges are similar but cannot be exchanged for the hood hinges and are marked with a **T**. Fit any shims found earlier.

Attach the latching hardware onto the hood and firewall as shown.



ebod\HOODHNDL

The hood is held off the body flange with 5 pieces of half-round weather-stripping. (Extra engine compartment ventilation is gained by leaving gaps in the rubber). Temporarily attach some pieces to locate the hood for bodywork. Use contact cement to attach the strips onto the hood flange after the car is painted.



Hoodgask

Lay the hood carefully onto the body, centering with cardboard or wooden shims inserted between the sides of the hood and hood opening. Leave a gap at the front edge so that the hood doesn't chip the paint when opened.

From inside the grille opening or engine compartment, lift the hinges assemblies into place. Align and bolt to the body and hood with the shims used earlier. Tighten all bolts.

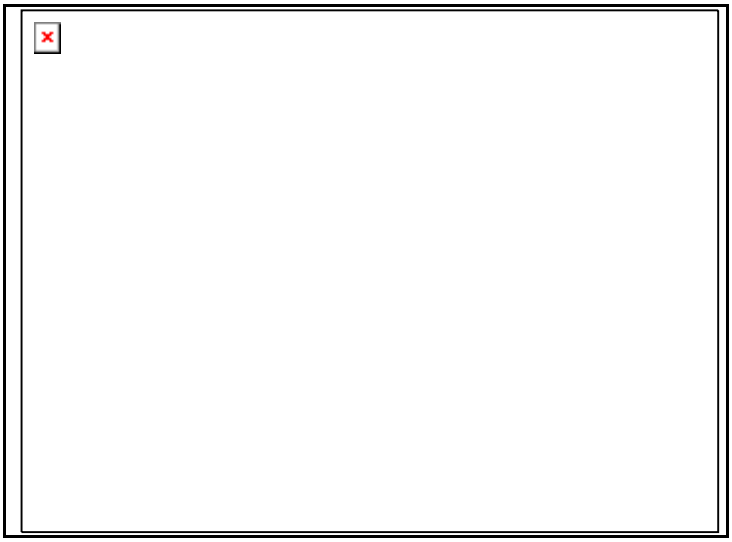
Carefully lift the hood, checking the front edge clearance. Adjust and/or change shims if needed.

Adjust the **hood strikers** on the firewall so that the hood is flush with the body. The hood seal will be compressed slightly, eliminating rattles.

HOOD PROP

(Pre-installed)

The upper and lower stay brackets are (factory) attached as shown.



HOODPROP

Note the orientation of the keyhole slot and the bend in the rod.

TRUNK LID

Tape the gasket to the main body as shown on page 78 for bodywork alignment prior to painting.

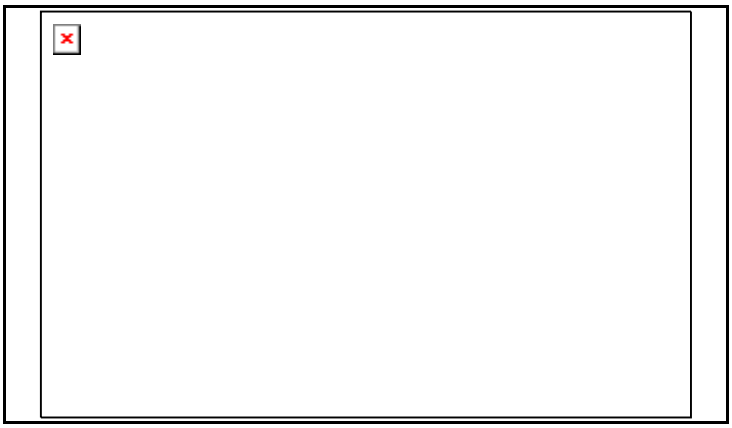
Bolt the trunk hinges (they are marked with a **T** on the lid side) loosely onto the body with any shims found earlier.

Loosely bolt the trunk lid (with factory shims) onto the hinges. Carefully close the lid, not letting the front edge contact the body. Center the lid in the opening. Slowly lift the lid just enough to get your arm (and a wrench) inside and snug the bolts on the lid part of the hinges. Remember to check the front edge while lifting lid.

The lid can be adjusted further by moving the lid and hinges in unit at the connection on the inner panel. Tighten bolts and recheck fit.

TRUNK STAY

(Pre-installed) Attach the trunk stay to the trunk lid as shown, using the sheet metal screws at the bottom, stainless steel dome head screws at the top.



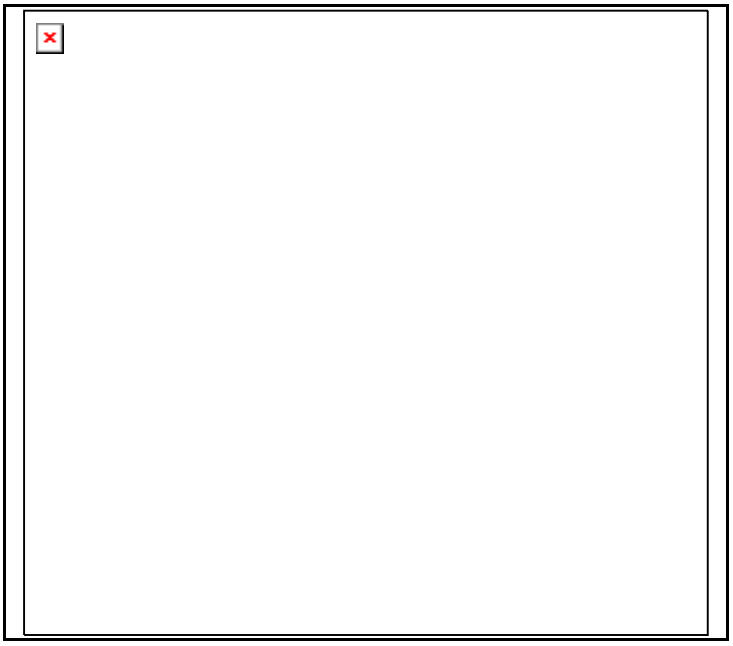
ebod\trnkstay

TRUNK LATCH

(Pre-installed) Attach the trunk handle and latch to the trunk lid as shown. Don't forget the gasket under the handle.

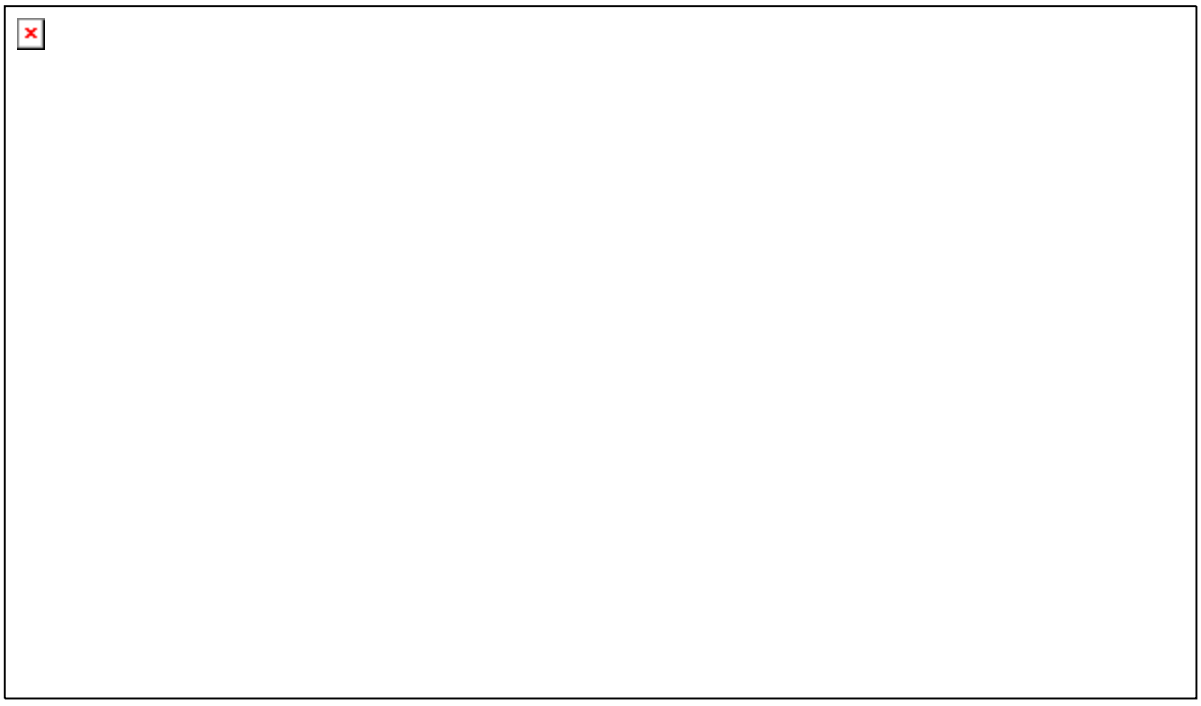
Attach the latch striker and bracket to the trunk floor.

Adjust the striker on the bracket so that when latched the lid slightly compresses the gasket and sits flush and centered on the surrounding body.

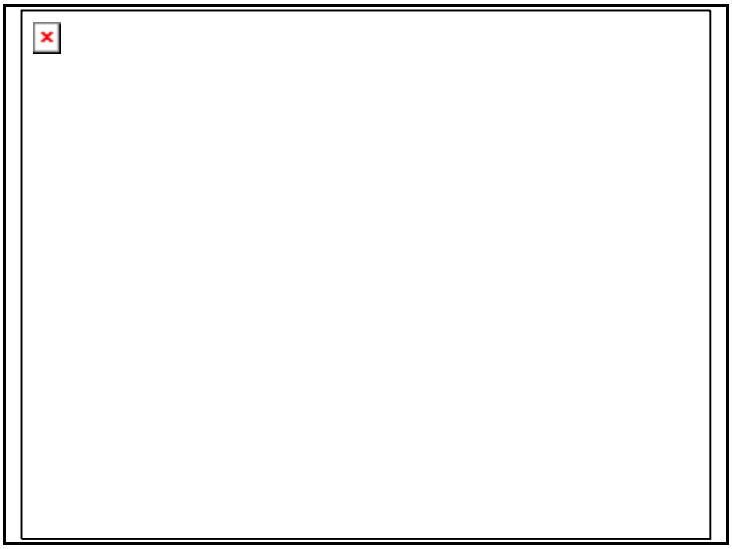


ebod\trnkltch

SECTION E
BODY PREPARATION



FITTING THE ROLL BAR



E\ROLLBAR

RETROFIT INSTALLATION

MAIN HOOP,

If the roll bar is not already fit, initially drill the holes for the hoop no bigger than the diameter of the bar. Call ERA for the approximate location of the holes. This will allow final adjustment of the holes to exactly fit the grommets.

Install the roll-bar hoop into the chassis and adjust the holes in the body if necessary. Leave the bar in place.

REAR BRACE

The spacer/shims are necessary at the brace's lower end to make installation possible.

After making a preliminary body hole, the upper brace mount must be welded to the top of the main hoop: Loosely bolt the lower end of the brace to the bracket on the chassis. Hold the upper end against the top of the hoop (you will have to experiment with the thickness of shims at the bottom) and tack-weld (MIG is preferred) in several places.

Remove the brace and the main hoop, and finish welding the upper mount. We use a TIG welder for the neatest job.

FINAL FITTING

Reinstall the roll bar and mark the body around the tubes allowing for the grommet thickness.

***Note**: Use the grommet groove diameter and not the overall grommet diameter when marking. See below.*

Remove the bar and enlarge the holes. Install the grommets and reinstall bar for a final check. Silicone will make installing the tubes through the grommets easier. The rear support grommet is a piece of rubber hose slit lengthwise. Its ends should butt tightly together.

BODY PREPARATION AND PAINT

The mold seam lines are the only areas that need a light coat of body filler, but the body should be blocked out all over for a show-quality paint job.

Body preparation and painting of FRP is not much different than steel, but it does require the same special skills. If you have no previous experience, it's probably better to have a professional body-shop do the work.

While E.R.A. doesn't do the exterior painting in-house, we have found a very reliable and competent local company that does all our turn-key cars at a fair price. Inquire.

GENERAL HINTS

The body is easier to prepare if it is on the chassis. We always permanently attached the body to the chassis before any body preparation is done. This avoids doing damage to the paint when the body is installed onto the chassis. The kit is designed so that the engine and transmission can be easily installed later.

If the body is painted on the chassis, **carefully mask** so that overspray is kept off the chassis and mechanical parts.

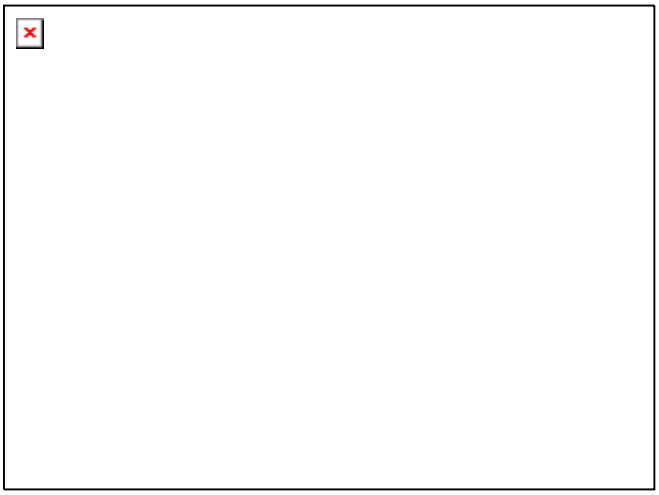
Remove any **clay** that remains on the mold break lines. Be very thorough. The clay has an oil base.

Wash the body with **soap and water** to remove any mold release still present, then use **wax and grease remover**.

For the show-quality body, we recommend that the entire body be covered with a thin coat of polyester or epoxy filler. The body can then be blocked out to perfection without using excess primer. **Don't lose the holes** for the tonneau snaps, cowl mirror, defroster vents or windshield center bracket in the process of filling. Once the body is painted, chase the holes with a .149" (#25) drill. Using a $^{9}/_{64}$" drill will work sometimes, but the tight fit will sometimes cause the brass shank to break.

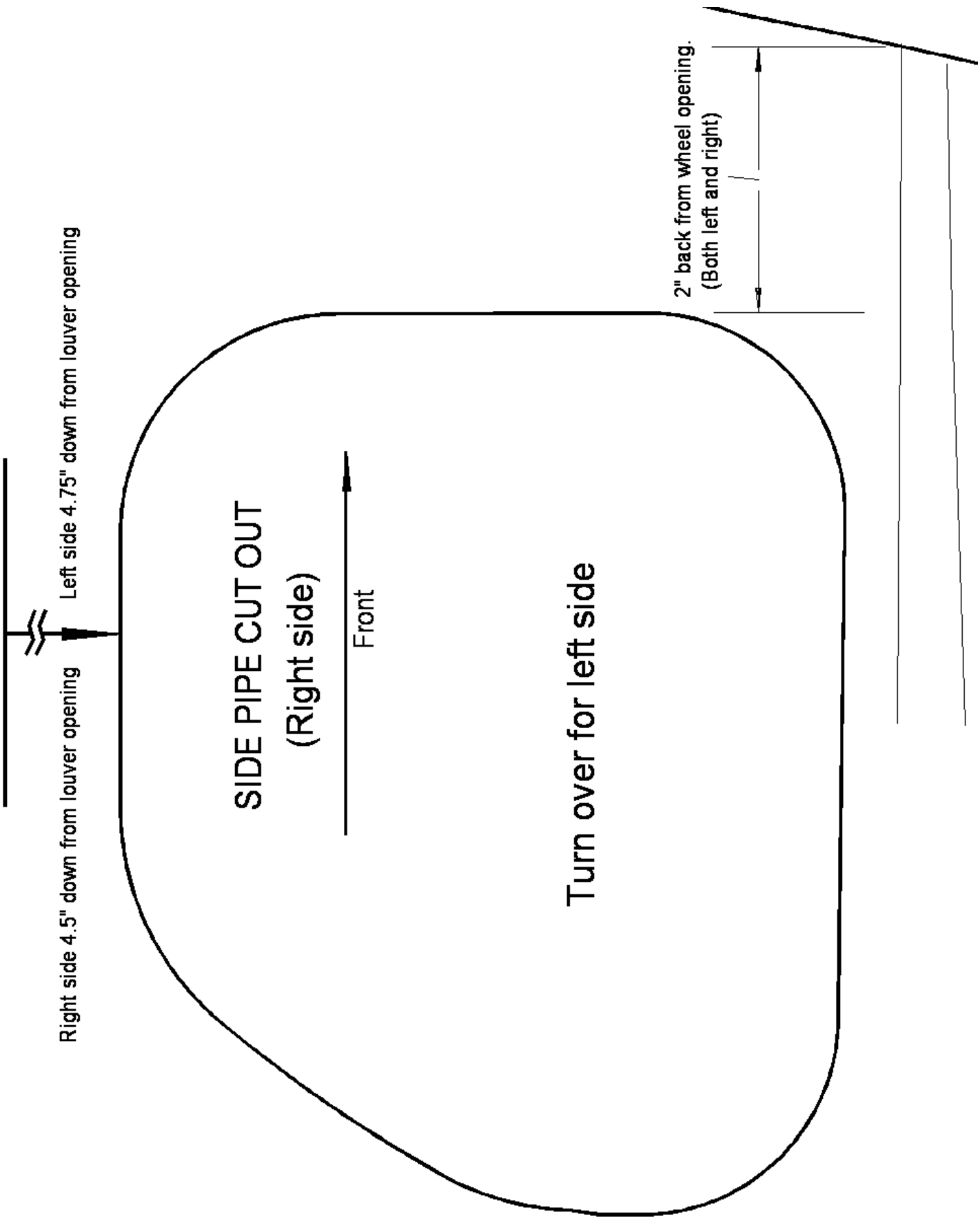
TRIM FOR 245-60 TIRES

Our standard 235-50-15 tire fits well within the standard flare but you might want to trim the bottom-inside of the front flare a bit to fit a 245-width tire. The driver's side is tighter than the passenger's side.



SIDE PIPE HOLES

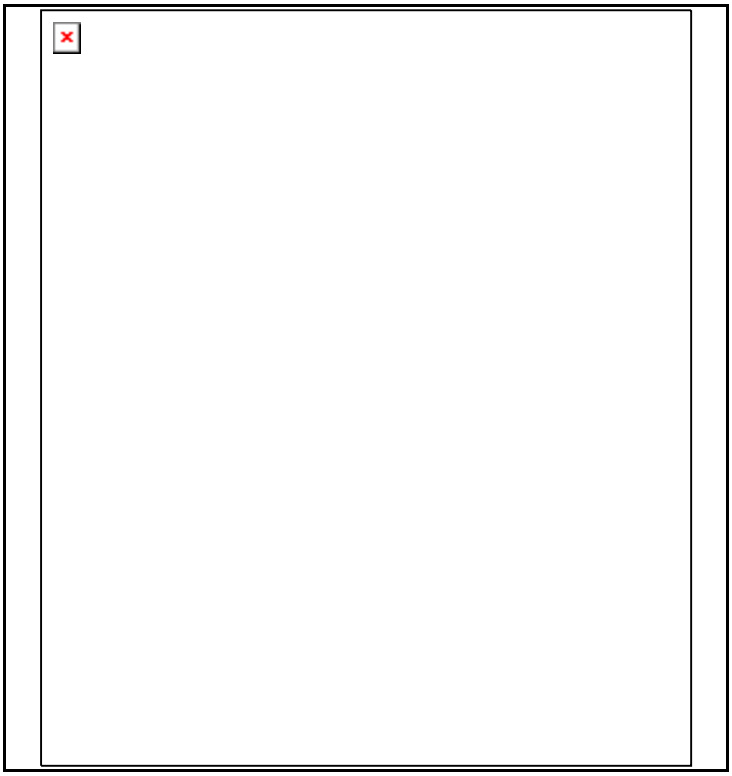
Use the template on the following page to cut the holes in the fenders.


Left side 4.75" down from louver opening
Right side 4.5" down from louver opening
SIDE PIPE CUT OUT
(Right side)
Front
Turn over for left side
2" back from wheel opening.
(Both left and right)

HOOD

INNER PANEL MODIFICATIONS

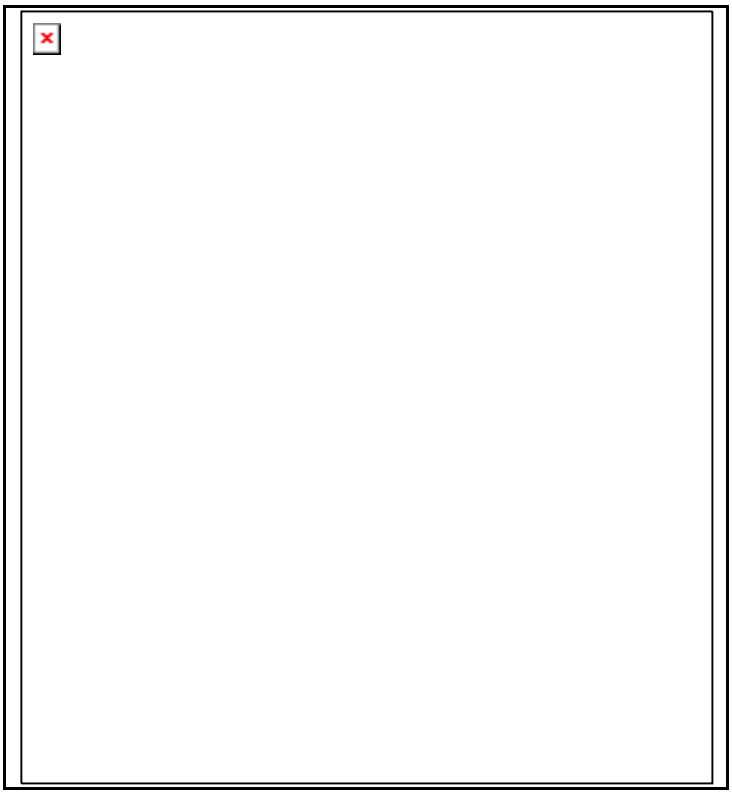
The "Turkey pan" or single round air cleaner does not require inner panel modifications. However, if you are using an oval air-cleaner, the inner panel must also be trimmed, whether using an integral or rivet-on scoop. See the notes below for the Ford 429/460 engine.



Hoodriv1

RIVET-ON SCOOP

Locate the hood scoop, inlet hole, and rivet spacing and number as shown below. Note that he hole is offset to the passenger's side to match the engine.



E\hoodriv2

Use small screws or Cleco® fasteners to hold the scoop in position while drilling all the holes. Wait until the parts are painted with color before final riveting.

To avoid panel distortion, use blind rivets with aluminum mandrels only.

The rivets used on the original competition cars to keep the front edge of the hood from peeling back at speed are also illustrated.

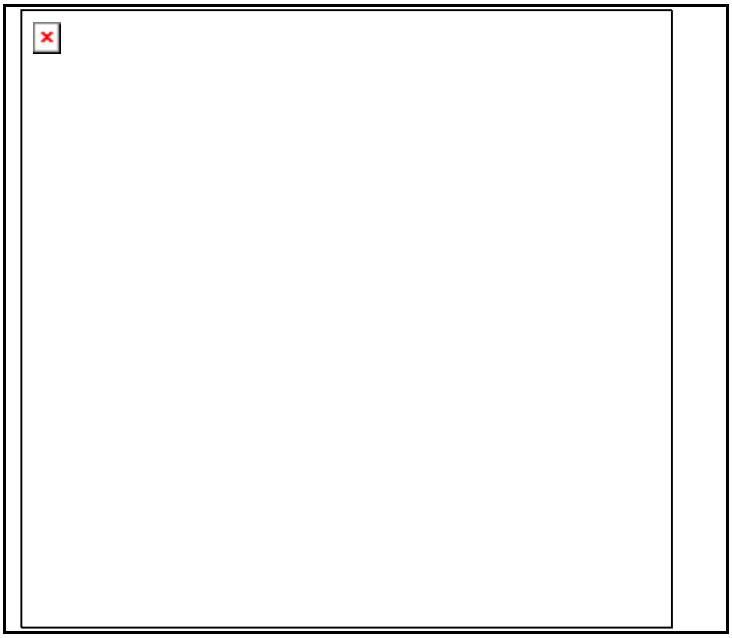
***Ford 429/460**

If you use dual 4 Bbl carburetors, the rivet-on scoop may have to be positioned further back on the hood than shown above. Cut the hole first and check clearances.

***Optional**: Finish and paint the rough fiberglass inside the hood so that it looks like the original aluminum.*

COWL EDGES

You may **round the edges of the front and back cowl** to give the original aluminum-wrapped-around-tubes look. Sculpt the existing glass with a grinder or coarse sandpaper.



eint\Doorfill

Use body filler to blend the areas where the inner panel meets the front edge of the door openings as shown above.

CHECK DOOR FIT

Check and adjust the fit of the doors as described on page 67.

PAINTING

The E.R.A. body requires only the standard techniques for fiberglass preparation, nothing special. Because of our methodical production rates, bodies are “seasoned” fairly well right from the factory.

You may use one-part color for economy or a 2 or 3-part clear-coat system for a show quality job.

Paint all panels, including the inner portions of the doors, hood and trunk lid.

COLORS

For reference, some of the more popular color schemes and contemporary equivalents are listed below. Visit us or your local paint supplier to look at color chips. Colors are also available (subject to the limitations of your monitor) at autocolorlibrary.com.

Guardsman Blue (B7)
Equivalent: (Evening Blue Met.)
(Deltron DBU3344)

Night Watch Blue (non-metallic)
(1987 Chrysler) DB9

Red (slight orange tint like original)
Equivalent: Honda R51

British Racing Green
1971 Lincoln code G (R&M A2426)

Twilight Blue Poly Non-original, but nice
(From 1990 Lincoln, PPG 4246)

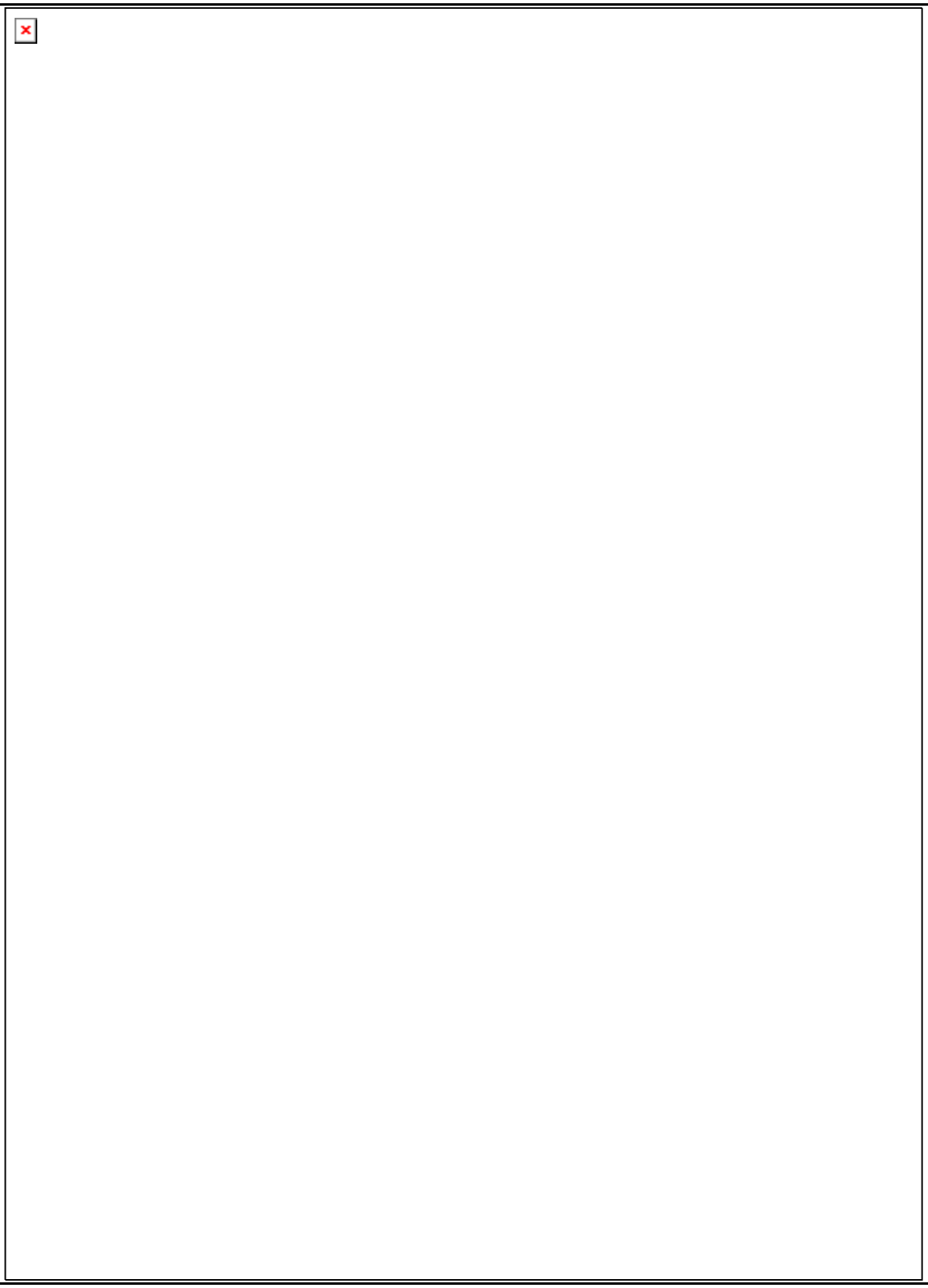
STRIPES

The "official" competition stripe layout and dimensions are shown on page 76. Extend the stripes around the edges of the body openings where indicated.

CHIP GUARD

Your painter can add a special material to the front of the rear fenders to prevent paint chipping from stones thrown from the front tires. Alternately, a clear plastic film (like 3M 84911, from your local body shop supply) can be added after the car is painted.

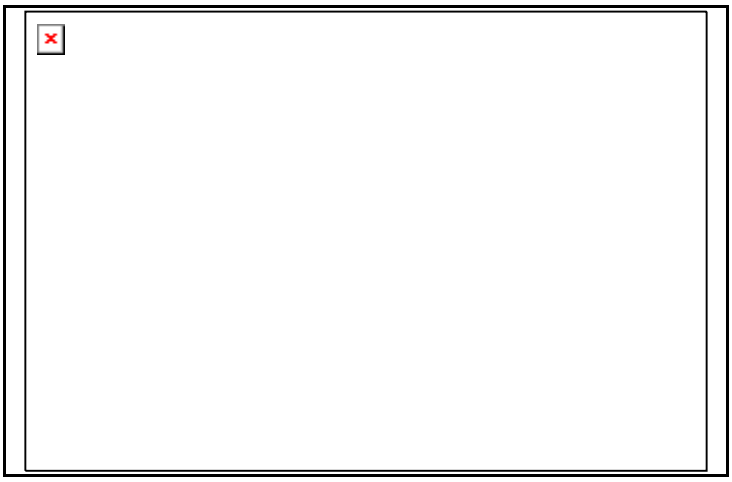
SECTION E -BODY PREPARATION-



ebod\stripe

DETAIL UNDERCOATING

For sound-supression or cosmetic reasons you may wish to undercoat or paint (flat black) the inside of the fender panels. Use spray or brush-on undercoating to cover all areas including the weather seals. From inside the front and rear wheel wells, brush on a coat of undercoating to seal the seams and the pores in the weather-stripping. Silicone will also seal the seams very effectively.



ebod\caulk

Check the body and chassis seams from underneath and seal openings with either the brush-on undercoating or the caulking used to mount the body. Pay particular attention to the rear closing panels where they overlap onto the upper trunk panel and the junction at the upper front corner of these panels.

If you wish to rustproof the inside of the chassis main rails, drill holes in the bottom of the chassis at the front and rear of the bottom rails. You may then spray a wax type material into the chassis, even up above the rear suspension. Close the holes with plastic or metal plugs.

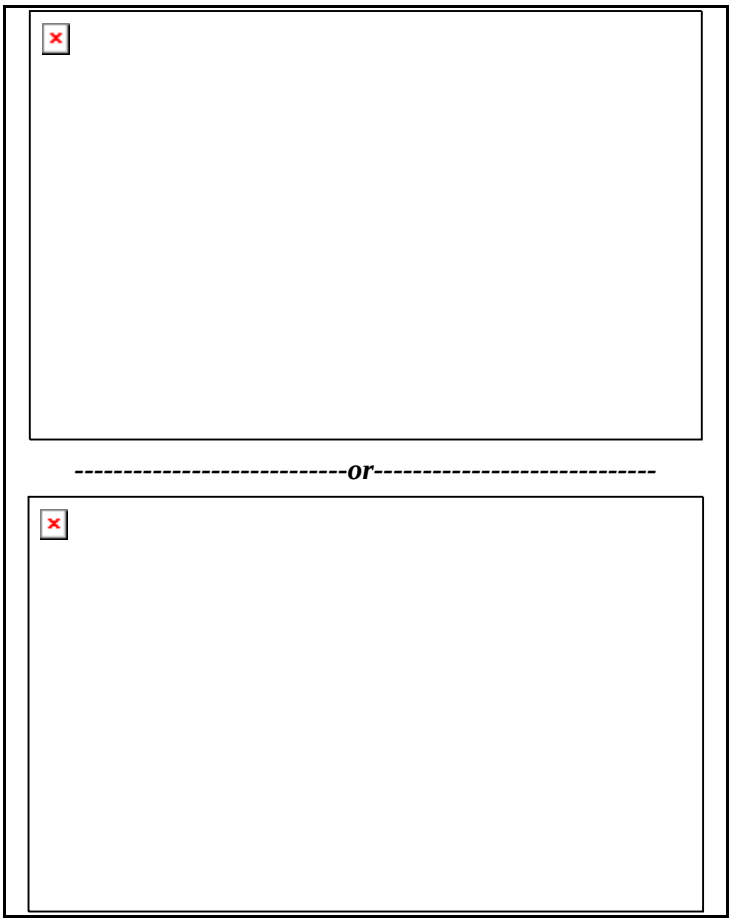
WINDSHIELD WIPERS

Prepare the wiper motor and other components as described on page 50.

INSTALLATION

Before you install the wiper wheelboxes, mock up the assembly off the car to check whether the cable properly engages the drive gear. Tighten the cover against the guide tubes. If the fit is too loose or too tight, bend the guide above the gear up or down as necessary. There are two typical designs that are currently available:

The shaft end-play of the second design can be adjusted by bending the tang on the cover.

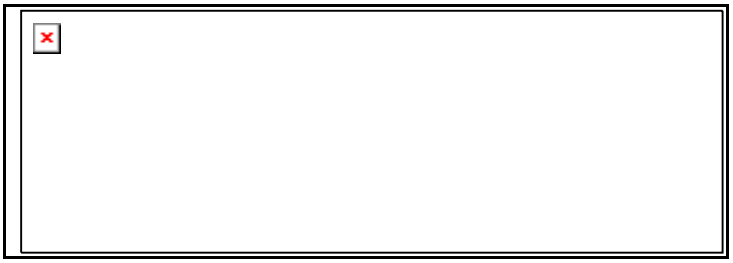


----------or----------

Insert the wiper wheelboxes (up through the holes in the cowl with the cable guides down and forward. It may be necessary to cut about $^{1}/_{8}$" from the drive spindle spacer sleeve to compensate for the extra thickness of the fiberglass body. Install the gaskets, bezels and nuts but don't tighten the retaining nuts.

Loosen the nuts holding the cable retaining plates to the wheelboxes.

From the engine side of the firewall, push the tube from the wiper motor to the right wheelbox through the grommet.



E\wiper2

Fit the cable tubes to the wheelboxes so that the flared cable tube ends lock into the slots on the wheelbox housing and back plates. Leave the retaining plates slightly loose so that the tube orientation may be adjusted. The short tube on the left gearbox is to support the surplus cable outside the left wheelbox.

If necessary, gently bend the tubes to create a continuous curve from the motor through each wheelbox. Be careful not to kink the tubes. Check by sliding the drive cable through each tube after bending.

Loosely attach the nut on the right cable to the wiper motor. See the illustration on page 51.

Coat the wiper drive cable with lithium grease and slide the wiper drive cable into the tube. Secure the wiper motor in the receptacle with the clamp and insulators provided.

Tighten all the wheelbox nuts and the tube nut to the motor.

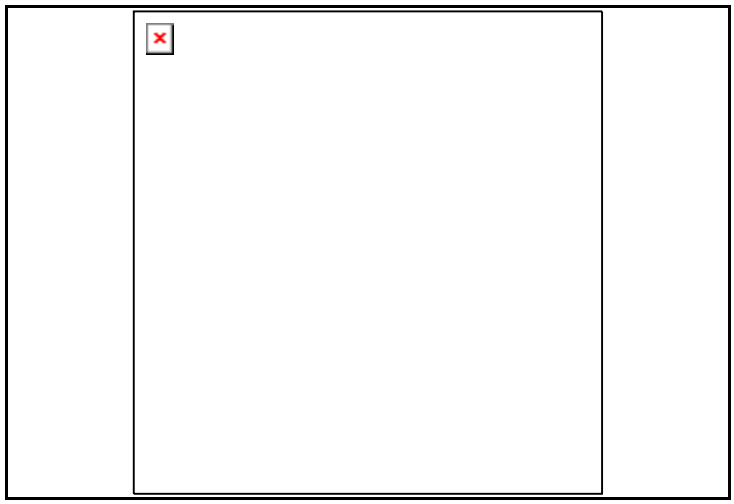
Install the wiring harness plug.

Don't install the wiper arms to the splined drive spindles until the motor has been run and the park (resting) position has been found. The wipers will park on the right (passenger's side). Installation and removal is described on page 139.

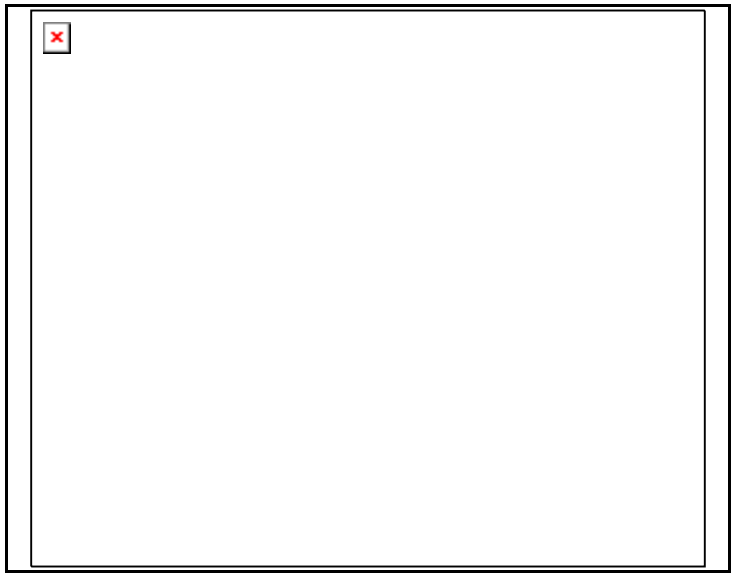
TRUNK LID

Install the trunk lid liner (the fuzzy stuff that was with the carpet kit) onto the inside of the trunk lid with contact cement. Trim the material so that it can be pushed just under edge of the fiberglass inner panel.

Glue the half-round **weatherseal** provided with the kit onto the trunk opening flange of the body, leaving about $^{1}/_{8}$"-$^{3}/_{16}$" distance between the edge of the seal and the up-curve of the outer lip. To keep from making a mess with the contact cement, you can use masking tape to border the where the weatherseal will be placed.



Do not stretch the seal while installing. Start the process at the center of the bottom lip, in front of the latch. Continue over the top and back down to the center. Trim the excess so that the ends meet tightly.



ebod\TRNKSEAL

HOOD GASKET

Permanently install the gaskets to the underside of the hood as described on page 67.

Door gasket installation is described on page 85.

FRESH AIR HOSES

After putting edge protector on the aluminum, carefully feed the fresh air duct hoses through the hole in the back panel of the front inner wheelhouse panels. Drape over the upper control arm. Final fitting will be completed later.

TONNEAU SNAPS

Chase the holes with a #25 drill (.150”). Install the tonneau snaps with the fiber washers. Don't force! The snap screws may twist off, leaving you with a broken screw in the body. For extra safety and ease, you can use a #10 steel screw to “chase” the threads into the fiberglass before you install the snaps.

WIRING AND ELECTRICAL

*This section presents general outlook on the layout of the various harness components. All individual connections are detailed in a **separate list** that comes with the harness. A **wiring diagram** is also included.*

The wiring system is divided into **three modules,** held in place with the clamps provided:

- The **front harness** makes connections from the front lights to the firewall.
- The **dash harness** makes all the dashboard and column connections.
- The third harness runs from the left side of the dashboard area to the **rear components**.

Install the electrical components on the **firewall** and **foot-boxes** into the pre-drilled holes as shown below and in the wiring instructions.

Install the **ballast resistor** (if you are using one) after laying out the front harness in the car. See the diagram in the wiring list.

Use the layout diagrams below and the wiring instructions to find reference points in the harnesses.

FRONT WIRING HARNESS

There are 2 primary branches and a grommet about 18 inches from the two large and two smaller multi-connectors. These branches separate just in front of the firewall.

From the engine compartment, pass the multi-connector blocks (one at a time) through the large hole in the center of the firewall.

If you are using an **MSD ignition module**, do not route the tachometer trigger wire next to the coil wires. Cross-induction may create erratic tachometer readings. Typically, we pass the trigger wires down the right side of the intake manifold, then across the front of the engine to the left wheel well. The coil wires pass down the left side of the intake to the coil.

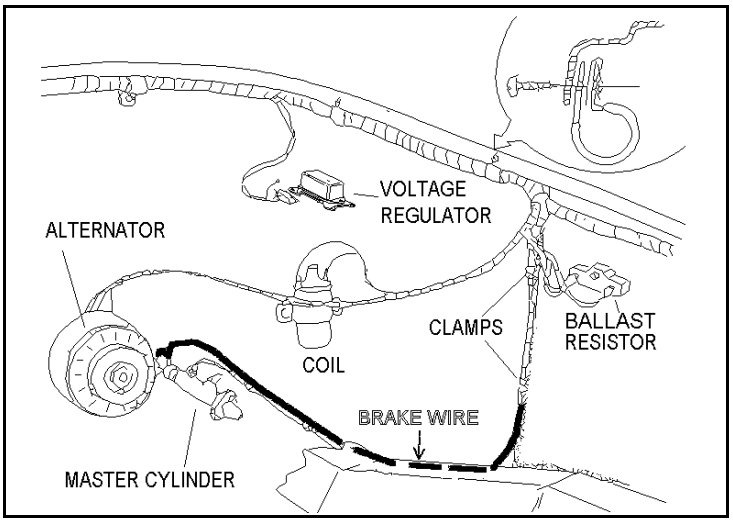
*Note: Attach the **radiator ground** to the upper fan frame bolt. See the picture at the right.*

FIREWALL

ebod\fwwire

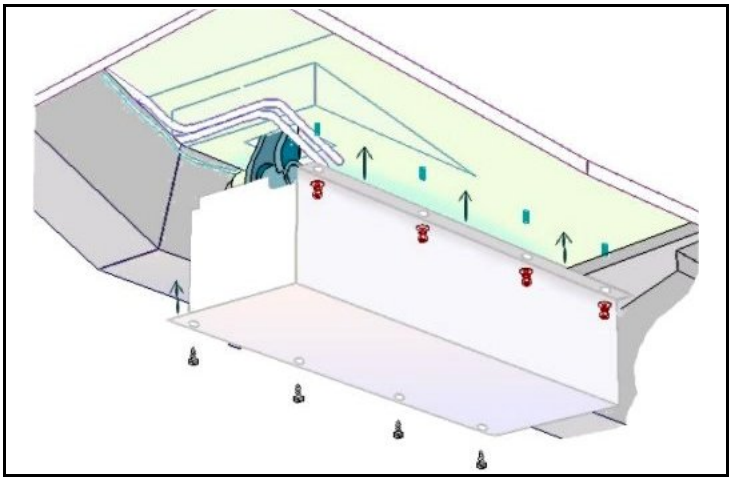
FRONT ENGINE COMPARTMENT

Attach the branch of wires to the ballast resistor, alternator and front lights to the left edge of the hood opening with the clamps provided.

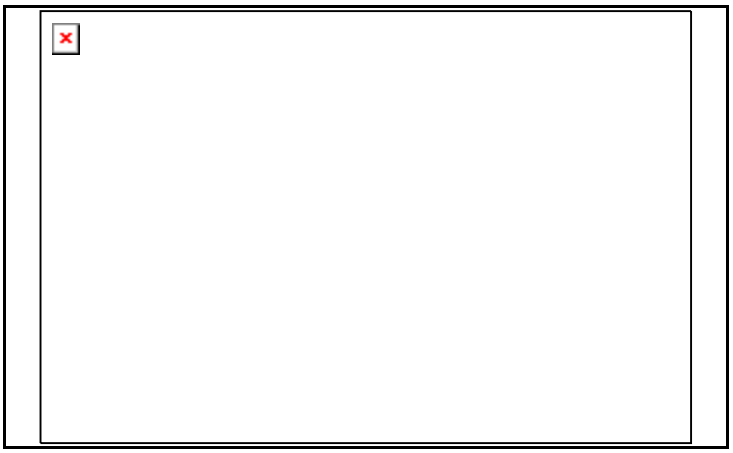


ebod\engwire

The brakes light switch wire passes down the corner of *the* wheelwell and is attached to the brake line with tie-wraps, and into the brake box through the notch on the inside front edge. The brake cover can be re-installed now. **Be very careful** installing the sheetmetal screws into the chassis rail. Don't overtorque.

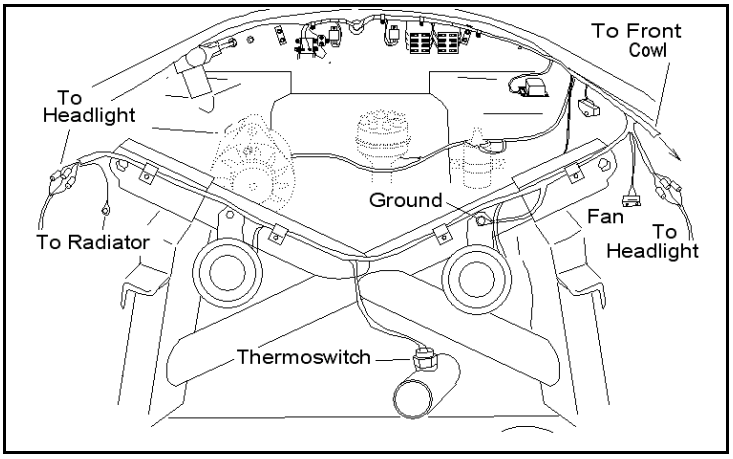


PARKING LIGHTS



e\fparkwir

X-MEMBER



ebod\fwire

DASHBOARD HARNESS

Wire the dashboard off the car. See the separate wiring instructions for individual connections. Make the final connections to the dash and steering column after everything is installed in the car,.

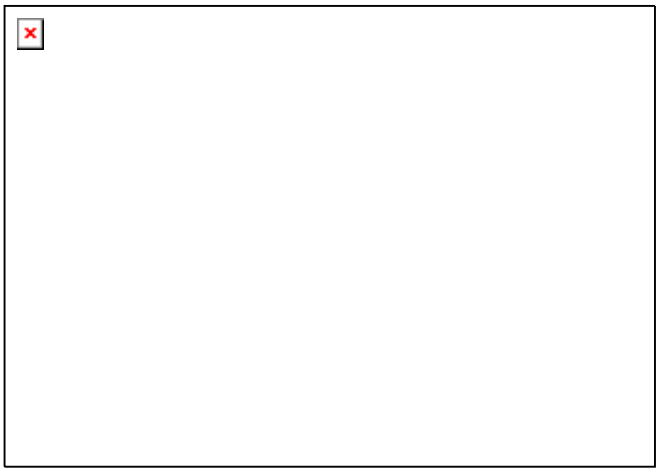
GROUNDING THE ENGINE

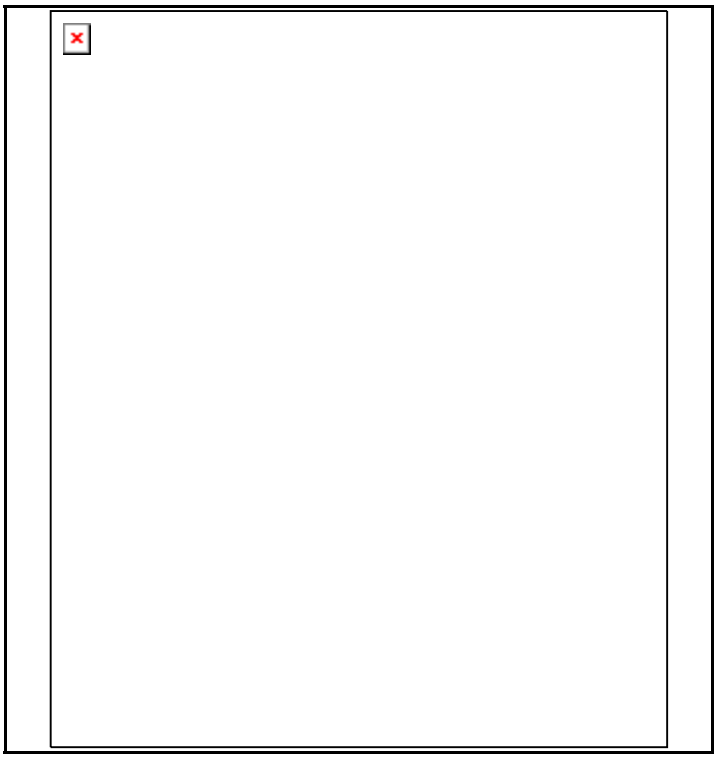
FRONT-MOUNTED BATTERY

Run the cable directly from the cylinder head to the negative battery terminal. Don't forget to also run the harness-kit ground wire from the cylinder head to the firewall.

REAR MOUNTED BATTERY

It's usually easiest to ground the transmission to the X-member.





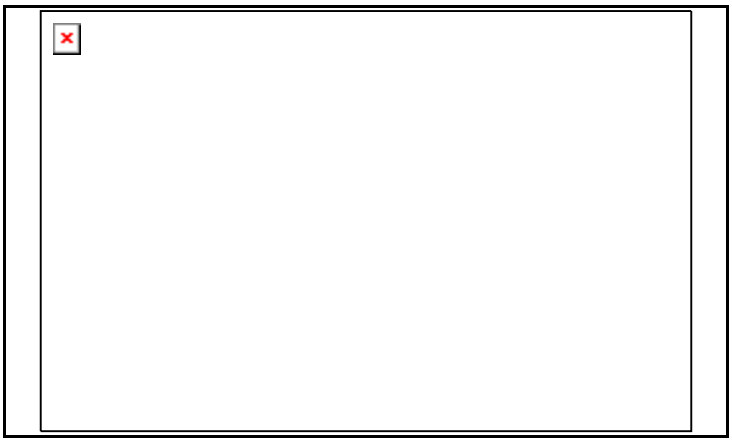
REAR HARNESS

The multi-connector block for the front end of the harness is with the dashboard module. Don't install it until after the rear harness has been passed through the hole in the side of the footbox.

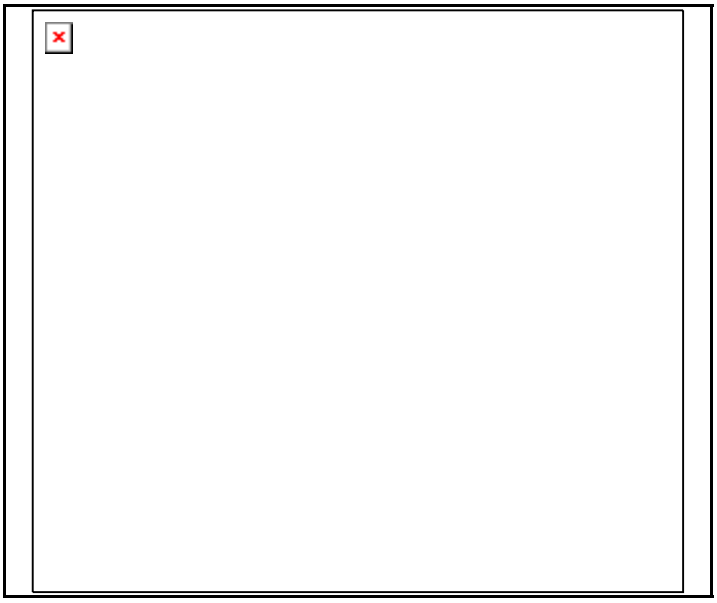
The rear harness is installed at the factory. The following shows the technique we use.

Install the harness from inside the trunk as shown. Tape a stiff wire to the harness, then pass the stiff wire through the passage, dragging the electrical harness behind.

Before the door sill aluminum is installed, pass the harness under the door sill and secure the harness to the fiberglass under the door sill.



Pass the harness through the gap in the aluminum filler and up through the hole in the side of the footbox.



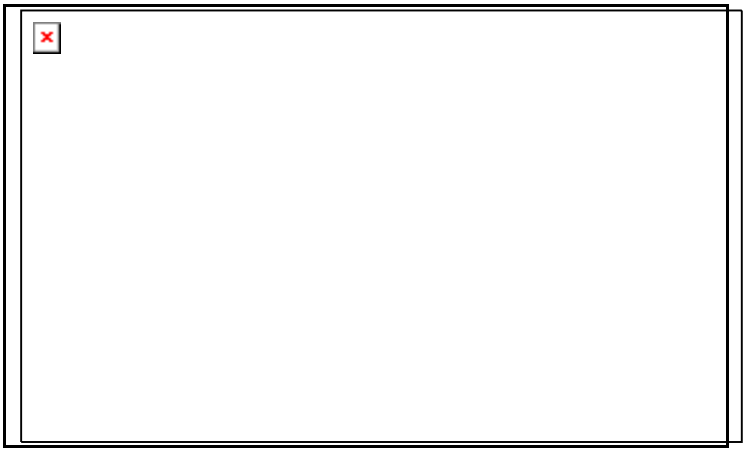
If you are carpeting the trunk, the fuel sender wire goes under the carpet.

INTERIOR PANELS

The inner door sills and the rear bulkhead panels behind the seats are attached with rivets and sealant. If you had E.R.A. bond the body, these panels are already attached permanently (with the rear harness pre-installed, too.) If not, leave the temporary fasteners in place while you drill through the holes in the panels with a $^{9}/_{64}$" bit.

REAR BULKHEAD PANELS

Blind rivet the top and side panels as shown, using the factory locating holes and drilling new holes in the chassis where needed.



RPANELS

SILL PANELS

The rear wiring harness must be in place before installing the sill panels.

Secure in place with the screws used for shipping. Drill holes for $^{1}/_{8}$" pop rivets every 2" or 3" on the bottom flange, door opening, rear steel support rail and through the front flange that rests against the vertical support rail. Align the edges of the front flange with the side of the vertical rail.

Note: Seal between the front horizontal flange and the body with caulking or foam rubber.

ENGINE AND TRANSMISSION

Refer to page 32 for engine and transmission preparation. **To check compatibility**, trial fit the transmission to the engine **before** any attempt to install either into the chassis.

It's easiest to install the engine and transmission separately. If you have a stationary engine lift, have the dolly wheels or the suspension installed so that the chassis can move under the engine.

The seats and tunnel must not be in place for installation or removal of the engine or transmission.

- Remove the hood and hood prop.
- Wrap rags or towels around the front "X" brace and over the transmission tunnel to prevent paint scratches.
- With the engine on a hoist and tilted down at the clutch end, carefully lower it onto the engine mounts, engaging the studs on the engine mounts into the slots in the mounting perches,

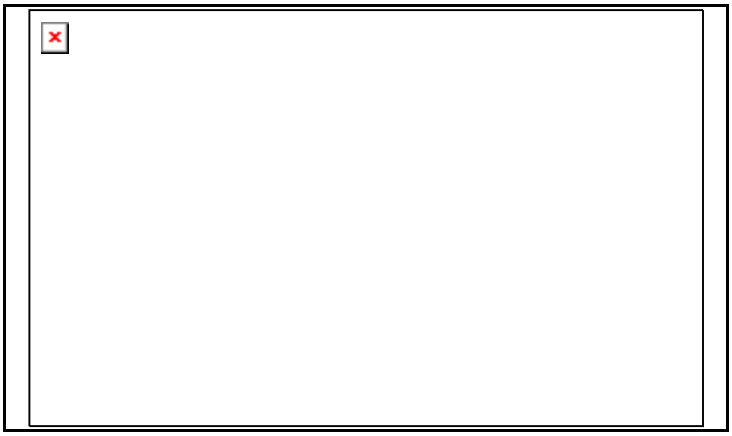
- Loosely install the washers and nuts onto the engine mount studs.
- Raise the back of the engine, either by changing the tilt of the adjustable engine lift or with a jack underneath the rear of the engine.
- Install the clutch and bell-housing on the engine. See notes on page 35.

Carefully install the transmission onto the back of the engine. You may have to rotate the transmission input shaft to engage the clutch disk. Immediately install the top bolts to prevent clutch disk damage from the transmission hanging free.

Install the starter and the balance of the bell-housing bolts.

Lower the back of the engine, engaging the transmission mount studs into the chassis.

- **Top Loader** - Front holes of trans adapter
- **Borg Warner** - Front holes of adapter
- **T-5 / Tremec 3550** - Rear holes of adapter
- **Tremec TKO Series, including the 500 and 600** All require an aluminum adapter available from ERA. Depending upon whether you have a standard-length transmission (with spacer) or a short-input-shaft the spacer may offset the holes to the front or back.
  Trim the GM mount at the rear diagonal where it comes close to the chassis X-member. The mount is secured to the transmission with 10mm bolts. If the bosses on the tailshaft are within 1/8" of the chassis, use washers or shims to raise the transmission.
- **Richmond gear** - No adapter necessary
- **C-6 Automatic** - Special chassis mount, no adapter necessary



cob\man\d\transmt

Check that the engine is level side-to-side in the chassis. Adjust if necessary.

Tighten all mounting bolts.

Removal is accomplished in the reverse order.

Special Note for Automatic Transmissions

There is no transmission oil cooler built into the radiator. To avoid transmission overheating you must mount an auxiliary cooler in the system. It can be mounted in place of the engine oil cooler or in front of the radiator.

DRIVE SHAFT

The drive-shaft is a special fabrication that may be purchased from E.R.A. or built by a local driveshaft shop. Driveshaft specifications for the Ford Top Loader and Richmond Gear transmissions are on page 49

INSTALLATION

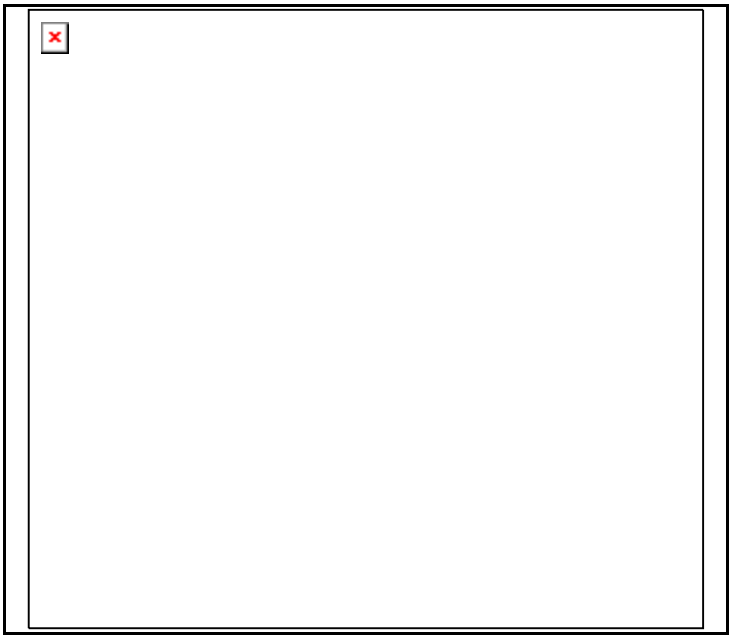
Use grade 8 bolts and washers, and stover nuts if possible. Lubricate the inside and outside of the slip yoke with a light oil. If your transmission tail-shaft uses a leather seal, lubricate the seal with light oil also. Use EP grease to lubricate each universal joint.

DOORS

INSTALLING POCKETS

Lay the doors on a soft surface, outside surface down. Snap the foam-covered metal door pocket attachment plates into the holes along the lower edge of the door. The plates are marked left (L) and right (R).

Position each door pocket on the door with the rear corner completely under the door latch with $^1/_8$" to $^1/_4$" of the pocket showing at the top and rear sides of the latch. Locate the screw holes with an awl and screw down the latch. See the illustration on page 84.

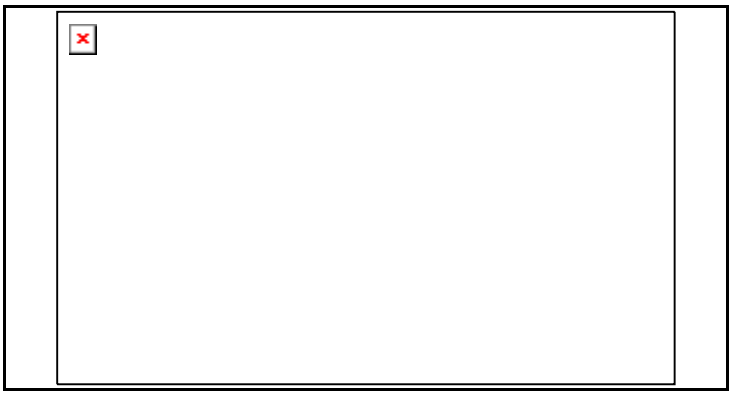


eint\doorpnl2

Stretch the door pocket into place with its forward edge even or slightly past the front edge of the door frame and $^{2}/_{3}$ of the way up from the hinge bottom mounting holes. Hold the top of the pocket in place with masking tape.

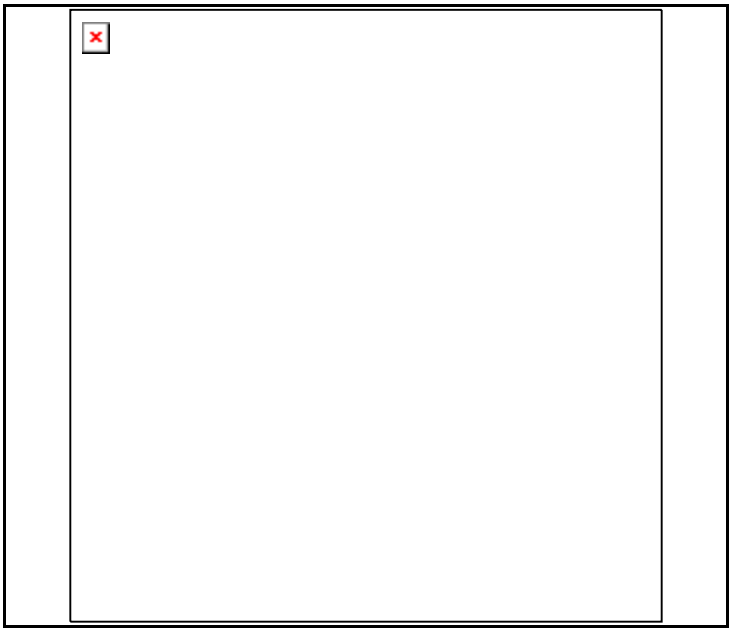
Attach the hinge loosely with the two upper bolts. Mark and punch holes for the two lower bolts through the door pocket. Attach the bottom of the hinge and snug the bolts.

Gently and evenly pull the bottom edge of the door pocket down over the bottom edge of the door. Stretch only enough to eliminate any wrinkles. Hold in place with several pieces of tape. With a temporary marker, trace the profile of the lower edge of the attaching plate onto the pocket. Also, mark where both ends of the plate fall.



eint\doorpnl3

Remove the door pocket from the door and trim the edge of the door pocket approximately 1" outside the marked line. Cut wedges out of the edge of the material almost up to the marked line.



eint\DOORPANL1

Re-install the pocket onto the door. Apply contact cement to the edge and backside only of the attachment plate and the back side of the pocket material. Let dry to a tack-free condition.

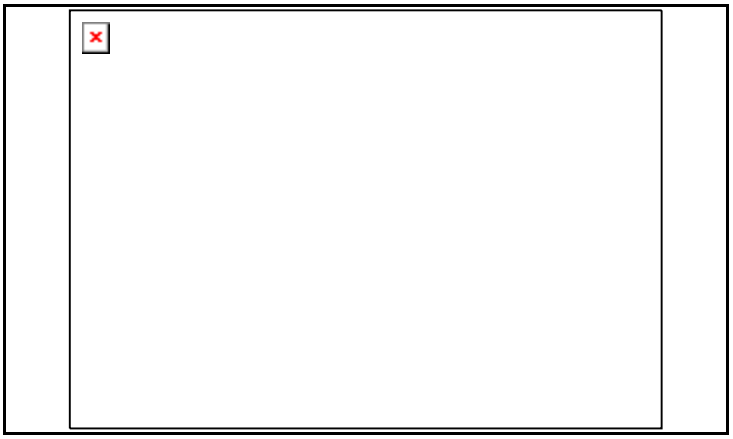
Carefully stretch the material over and partially around the attachment plate.

Remove the attaching plate from the door. Tape or clamp the upper edge to a flat surface and finish gluing the edge.

Before attaching the pocket to the door, glue the rug (items 7 and 15 in the rug installation diagram on page **Error! Bookmark not defined.**) to the inside of the door with contact cement. Install the door pocket and the latch onto each door.

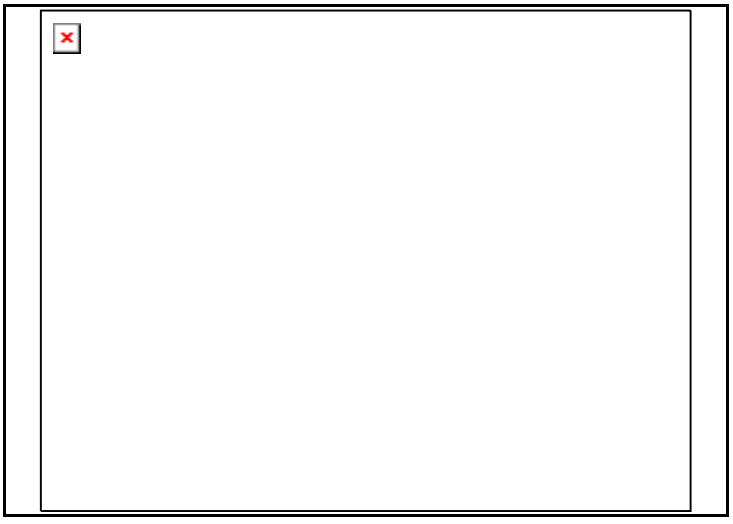
DOOR WEATHERSEALS

Lay the doors, outer surfaces down, on a soft surface. Clean the door edge and rubber with a mild solvent. Glue the door weatherseal (start with about 60" - trim the ends later) provided onto door lip about $^{1}/_{8}$" from the door edge using contact cement or weather-strip adhesive. Don't stretch the weather-stripping: It will eventually shrink to its original shape, pulling away from the corners. Trim the ends of the weather-stripping as shown.



E\DOORGASK

SIDE CURTAIN FERRULES



FERRULE

Slip the ferrules into the holes on the top of the doors and note the length that each extends past the inner panel.

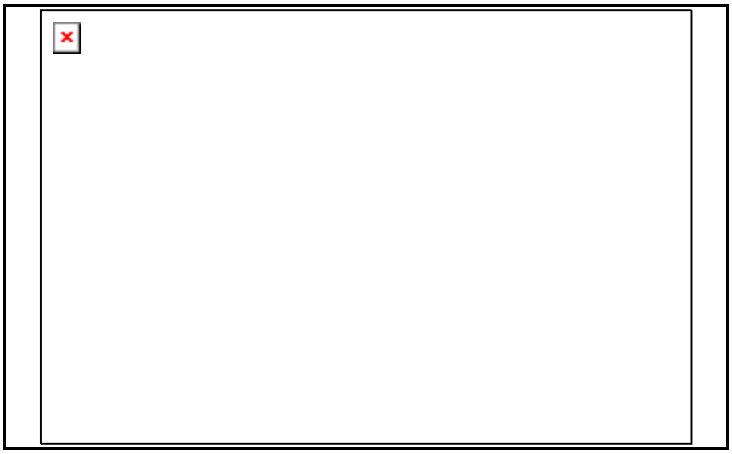
Mark each ferrule so there are no more than 2 or 3 threads showing between the mark and the door surface on its shortest side,

Cut off the excess at the mark, and slightly round off the edges with a file or sander.

Hold the ferrules in place with the retaining rings provided. Seat the retaining rings against the door surface tightly.

DOOR PULL STRAP (OPTIONAL)

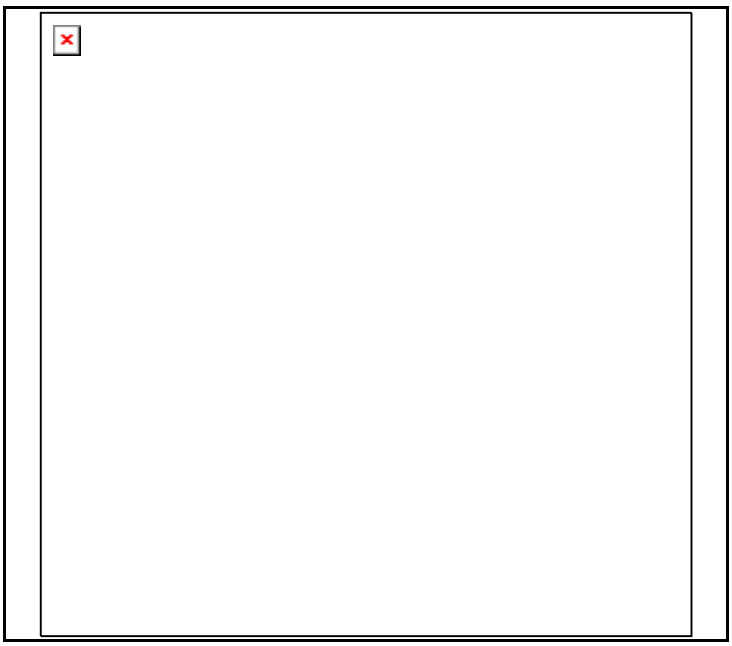
Drill a hole (#30 bit) just to the rear of the side curtain ferrule. Loop the strap over the latch ball and use the screw and countersunk washer at the front.



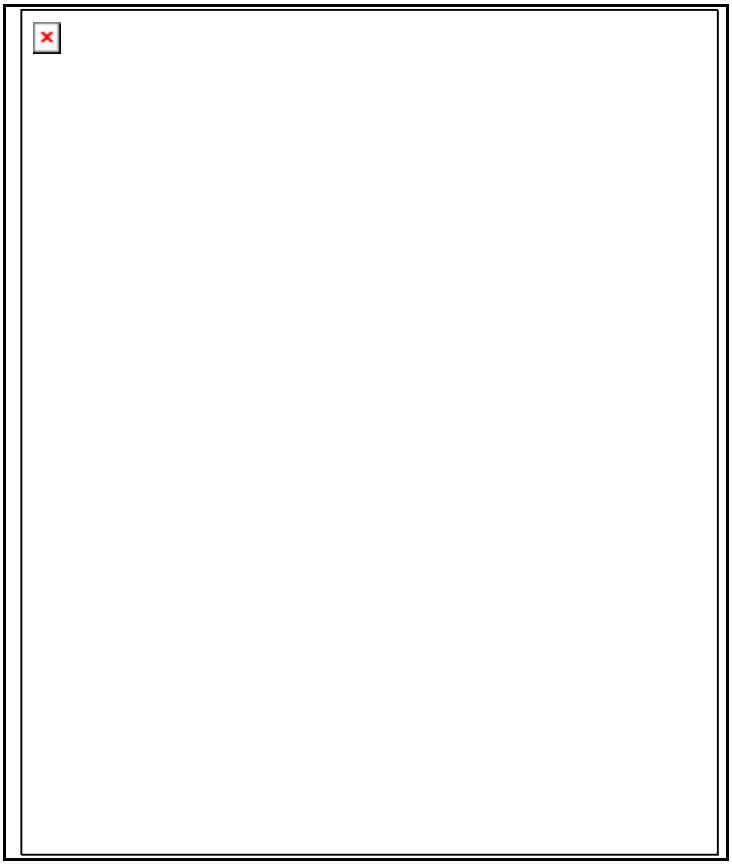
DOOR INSTALLATION

The doors can be installed now, but to make other operations easier, it's best to wait until near the end. See page 123 for installation details.

ACCELERATOR PEDAL AND LINKAGE



All components are pre-installed on every kit.



e\throtlnk

Fit the rod end (C) through the footbox using a large washer on either side of the hole.

Install the pedal assembly (A) with the linkage bracket (B) onto the foot box. At the back, secure to the fiberglass with bolts through the brace bracket and spacers. At the front, secure with the front steering flange bearing bolts.

Loosely bolt the bracket (D) onto the engine using the rear-most intake manifold bolt. The final object is to have the cross-shaft as parallel to the firewall as possible, so the orientation of the bracket may be changed so that the vertical and rod-end support are toward the firewall. Adjust the placement of the rod end in the bracket so that the cross-shaft is roughly horizontal.

Fit the left end of the transverse link (F) to the rod end on bracket (B). Secure with a cotter pin. Slide a rod end (E) onto the transverse link and bolt to the bracket (D).

Note: This linkage can be adapted to most engines. If yours requires something different, please call us. The FE **dual-quad** setup requires an additional linkage assembly.

ADJUSTING THE LINKAGE

Wire the carburetor linkage fully open.

Install the cross-shaft engine support bracket so that the shaft will end up as parallel to the firewall as possible and fairly horizontal.

Install the link from the carb to the cross-shaft, adjusting the length to have the cross-shaft bellcrank angled about 30 degrees back toward the firewall.

Adjust the bellcrank on the pedal shaft so that it is angled back toward the firewall about 20 degrees when the pedal is bottomed out on the floor.

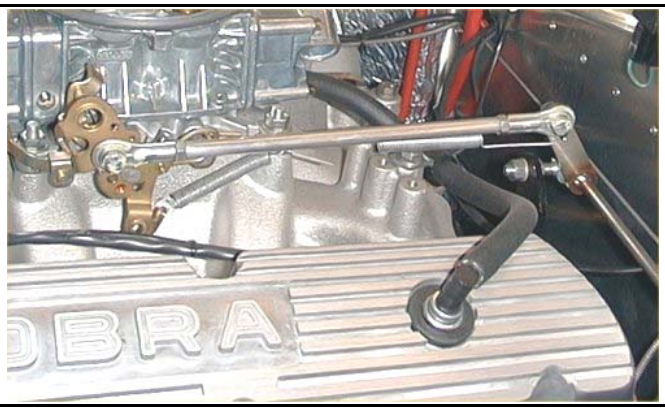
Install the link from the pedal to the cross-shaft so that the pedal just hits the floor.

Remove the wire holding the carburetor linkage open and check whether the pedal is at a convenient height. If it is too high, change the link footbox link to a lower hole on the cross-shaft. If it is too low, change the engine link to a lower hole on the cross-shaft.

Install the return springs as shown below and confirm that you're still getting full throttle.

Tighten all bolts and jam nuts, check for interference, and grease all the pivot points.

If you want the "smooth look" shown below, cut some $^{5}/_{16}$" brake line to length to cover the middle section of the threaded rods.



EXHAUST HEAT SHIELDS

E.R.A. offers a set of heat shields that help to contain heat of the primary exhaust pipes where they are close to the foot-boxes. They can be fit before the engine is in place and are easily removed for primary pipe installation.

LEFT SIDE INSTALLATION

*Right and left pieces are **marked L and R**!*

d\htshld2

Hold the vertical shield against the bottom of the tube at the front of the footbox.

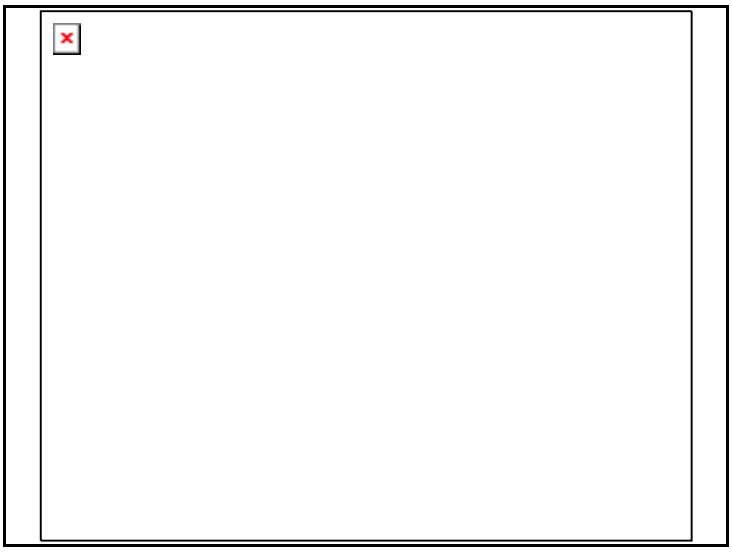
- Left: the inner edge about $^{1}/_{2}$" from the main frame rail.
- Right: the inner edge about 2" from the frame rail.

Mark and drill for the Tek© screws supplied.Attach the top to the vertical shield. Mark and drill the wheel-house for the sheet metal screws provided.

RIGHT SIDE INSTALLATION

These shields are only used when the battery is moved to the rear.

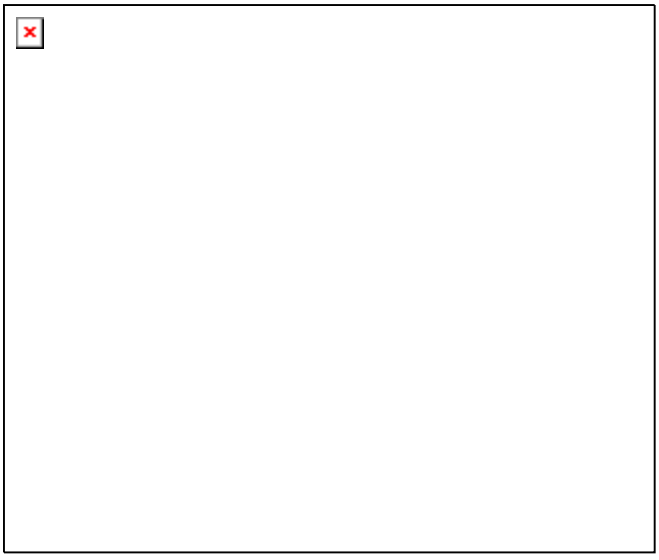
Install like the left side.



ROLL BAR

Insert the 3 roll bar grommets into the rear body cut-outs.

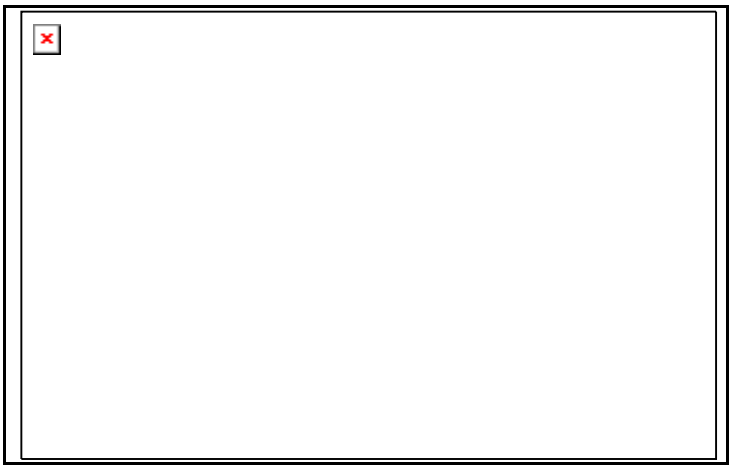
Lubricate the inside of the grommets with silicone spray or Armor-All® and install the roll bar hoop and support brace as described on page 71.



RADIATOR AND FANS

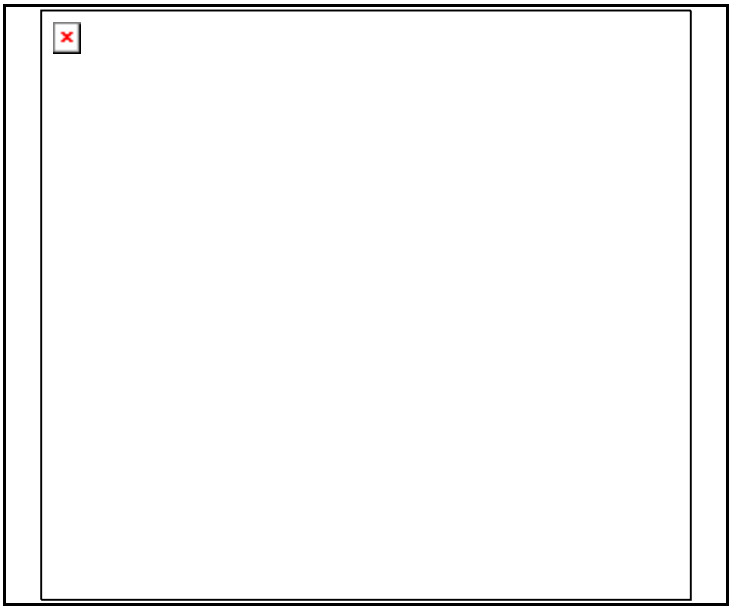
All pieces are pre-installed on every kit.

Install the upper shroud on the bottom side of the cowl inner panel as shown.



E\upradmt

Insert the rubber radiator grommets into the holes in the radiator support tray and install the tray onto the studs in the chassis.



Drop the radiator into place from inside the engine compartment. Fit the rubber grommet to the upper radiator tab, and install the upper tab from the shroud to the radiator stud. Secure with large flat washer and cotter pin. Install washers and cotter pins onto the bottom pins too.

Install the fan and bracket assembly as shown above.

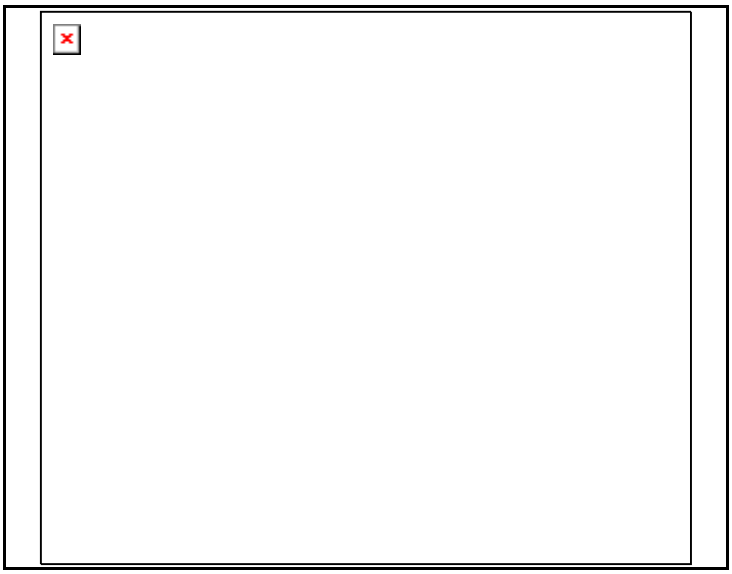
If you have the optional E.R.A. **oil cooler** (see page 90), the support straps from the oil cooler mount are to the outside of the support straps.

OPTIONAL FANS

15" REAR MOUNTED

ebod\optfan3

TWIN 10" FRONT MOUNTED



e\ffans2

RETROFIT INSTALLATION

Install the blades on the motor shafts with the concave side of the blade facing away from the motor (toward the radiator). Line up the setscrew with the flat in the shaft. Tighten the setscrew with the shaft end flush with the fan hub.

Install the end plates as shown. **The end plates are handed**. The top is angled in slightly and there is a drain hole in the bottom corner. Don't tighten the nuts until after the brackets are fastened to the inner panels.

Remove the grill splitter if you have one.

Cut a 1" x 4" piece of wood, about 13 1/4" long.

Lay several pieces of cardboard 16" x 14" (stacked at least 3/8" thick) on the front face of the radiator.

Rest the fan assembly on the cardboard, supporting the fan cross tube by placing the wood between the front of the bottom shroud and the tube.

Center the fan blades on the radiator and shift the cross tube so that it is horizontal.

Move each end bracket out, flush with the fiberglass panel.

Mark the fiberglass panel through the holes in the bracket.

Remove the fan assembly and carefully drill the fiberglass panel, first with a 1/8" drill, then with a 5/16" drill.

Install the assembly with the bolts and washers provided.

Check that the clearance between the fan and the radiator is at least 1/4".

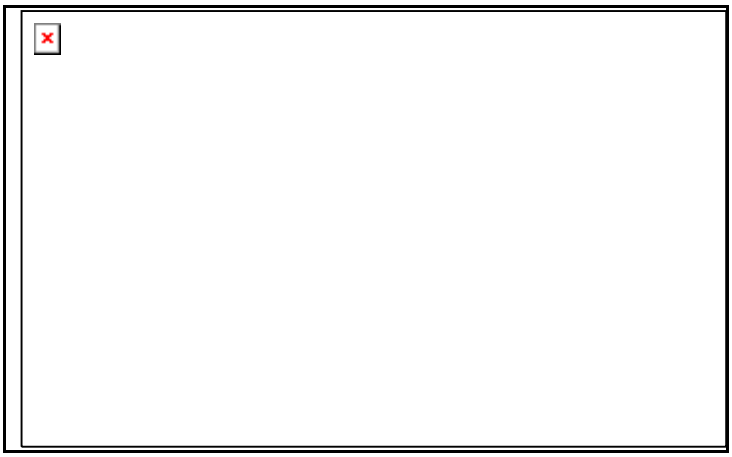
Wiring is covered in the separate instructions.

RADIATOR SHROUDING

Attach the bottom radiator shroud to the 2 middle holes in the front edge of the radiator tray as shown. Install the left and right shrouds on top of the bottom, using the same lower screws. **Note**: If you are installing your own (not E.R.A.) oil cooler, the shrouding panels must be modified. The E.R.A. oil cooler comes with pre-drilled shrouding.

ebod\radduct

The shrouding for the optional 6" oil cooler is assembled as shown. See page 91 for the hose layout.



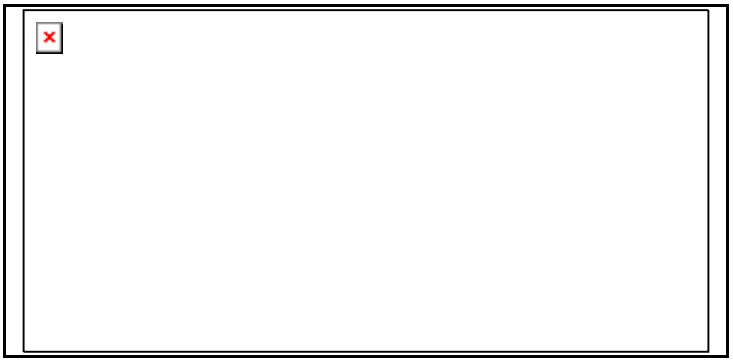
E\oc6lay

GRILLE AIR FOIL

Using the "Splitter" is a personal choice. It was originally on the street cars, but not the competition ones.

When fitting the airfoil take special care not to chip or scratch the paint on the body.

Attach the plastic (chrome) molding to the airfoil after painting, but before installation into the body. The molding is shipped from E.R.A. taped to a flat surface. Remove any contaminants from the front edge of the airfoil. Peal off the protective strip from the back side of the molding and carefully apply the molding to the front edge of the airfoil. *Once on, it cannot be removed without damage.*



ebod\splitter

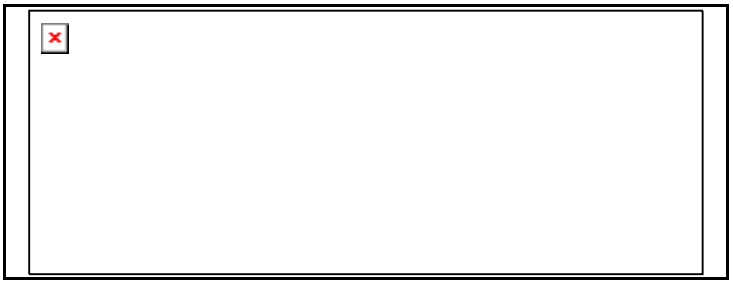
OIL COOLER (OPTIONAL)

See below for shrouding hole locations and sizes to retrofit an E.R.A. oil cooler to your car. If you buy the oil cooler with the kit, the holes will be pre-drilled.

If you use your own oil cooler, your hole pattern may be different.

***ALWAYS** flush and clean the hoses, adapters and fittings before you add oil to the system.*

It may take some time to fill the lines and cooler with oil. You might want to get initial oil pressure with an oil pump driver through the distributor hole.

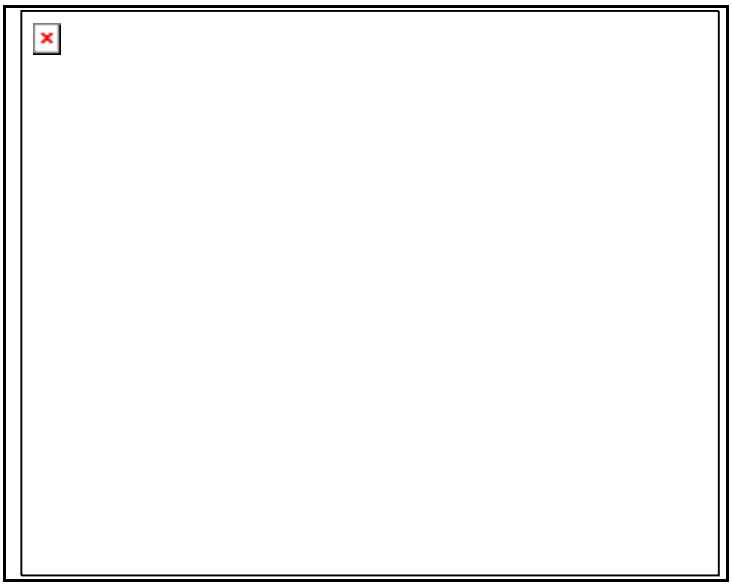


ebod\fradfill

4" COOLER WITHOUT REMOTE FILTER

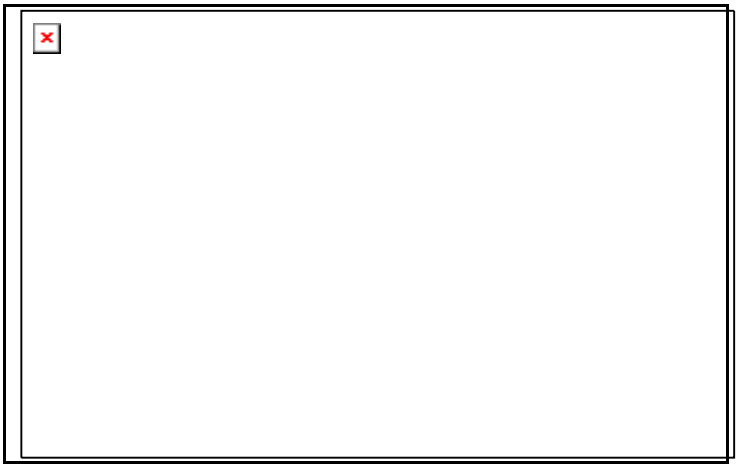
See page 90 for 6" Cooler shroud layout.
Hose connections are the described below.

Mount the cooler on the shroud:



ebod\oilclr4

Connect the hoses to the adapter and cooler as shown. Use Teflon tape or pipe joint compound on the threads where the fittings attach to the cooler and adapter.



ebod\oilclr6

The adapter housing mounts onto the engine filter housing using the substitute fitting included. The oil filter mounts on the adapter as shown.

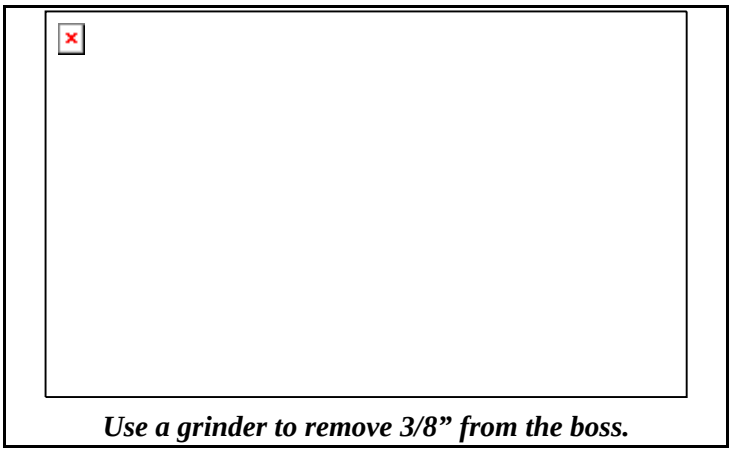
Fit the rubber grommets onto the lines first. Then, with the shroud removed, pass the lines through the shrouding, tweeking the grommets into the holes with a screwdriver, etc.

The longer oil cooler line runs from the right side of the cooler alongside the radiator and is tie-wrapped to the bottom of the upper control arm inner pivot, then through a clamp on the front of the oil pan to the right fitting on the adapter housing.

The shorter line runs along the left side of the radiator. Since the fitting is quite large, pass it initially by the bottom corner of the radiator, then slide it up a bit. Tie-wrap it to the control arm pivot shaft, then back below the steering shaft and to the left fitting.

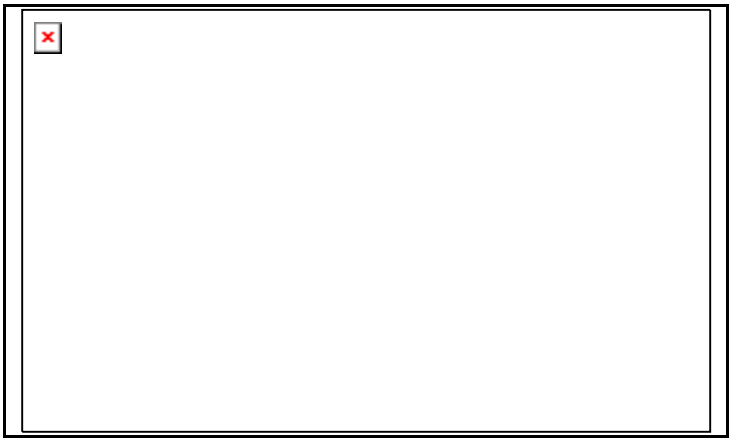
COOLER WITH REMOTE FILTER

Mount the remote filter on the water pump with the E.R.A. adapter bracket. Some modifications to the pump might be necessary.



Use a grinder to remove 3/8" from the boss.

Assemble the other components as shown. The water pump may require modifications to the bottom mounting boss (instructions included with cooler kit).



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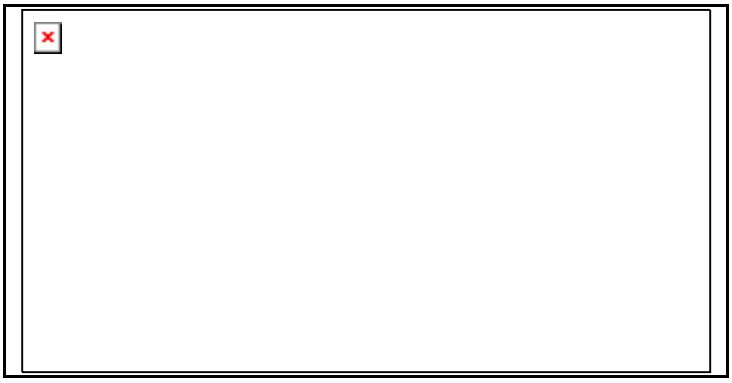
WITH IN-LINE THERMOSTAT



oilclr7

FUEL TANK

The 19-gallon aluminum fuel tank is baffled, with one-way doors separating the volume into four sections, capturing the fuel toward the front/center of the tank during cornering and acceleration.

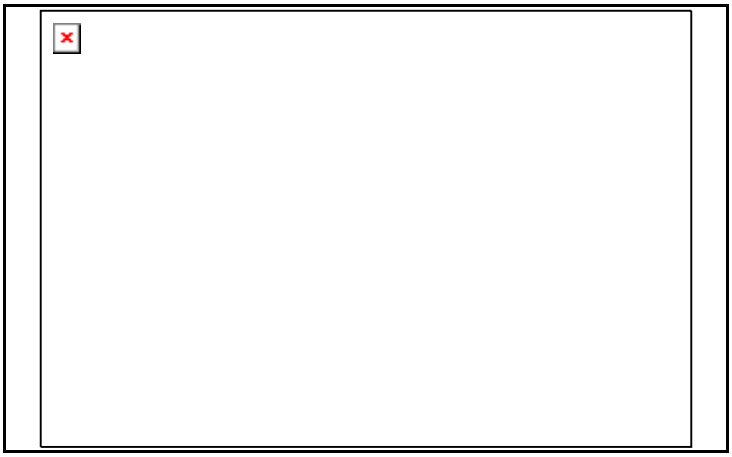
A **drain plug** is at the right front of the tank bottom.

The **fuel sender** is in the center-front section of the tank, and installed at E.R.A. If you find it necessary to remove the sender, use a fuel-resistant sealant like Versachem Gasket Sealant #3 Aviation. A jumper wire is taped to the top of the tank that mates with the connection to the rear harness.

INSTALLATION

Place the tank under the car and connect the sending unit wire(s).

Raise the tank between the frame rails, guiding the filler neck through the body hole. Hold in place with one ($^{5}/_{16}$" USS) bolt per side. Install the rest of the bolts and washers.



Ebod\Fueltank

Connect the fuel outlet on the center rear of the tank to the steel line on the chassis (both $^{3}/_{8}$" OD) with a length of rubber fuel line. An in-line fuel filter can be conveniently installed within this section of line. Use clamps on all connections.

Slide the seal plate over the fuel tank neck and secure with the screws. See the filler cap illustration.

FUEL FILLER CAP

The cap and outside flange are indexed with punch marks (or a common number} on the outside edge of the upper mounting flange. This corresponds to where the latch of the filler cap falls when the cap is fully screwed onto the flange.

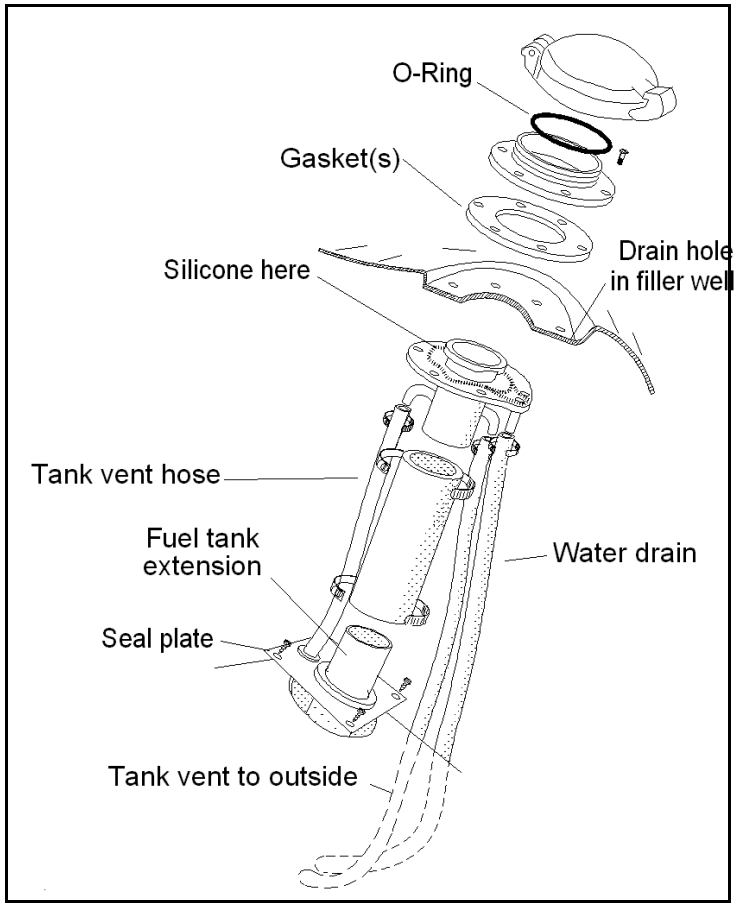
Note the odd hole falling just outside the upper flange on the body and lower flange. A water drain for the filler well is integrated into the bottom flange of the filler cap. The tube in the lower mounting flange channels water out of the well , through a hole in the trunk.

FLANGE

Put a generous amount of RTV silicone gasket sealer on the top surface of the flange.

Line up the drain hole on the flange and the body. Hold the lower mounting flange in place on the underside of the fender.

INSTALLATION

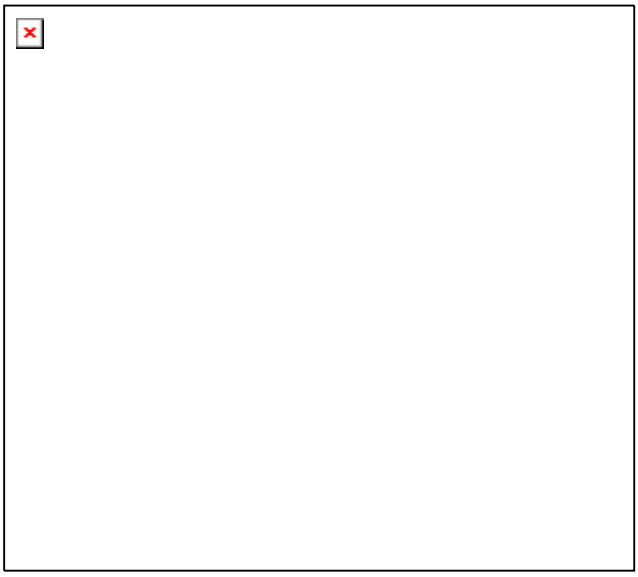


ebod\fuelfill

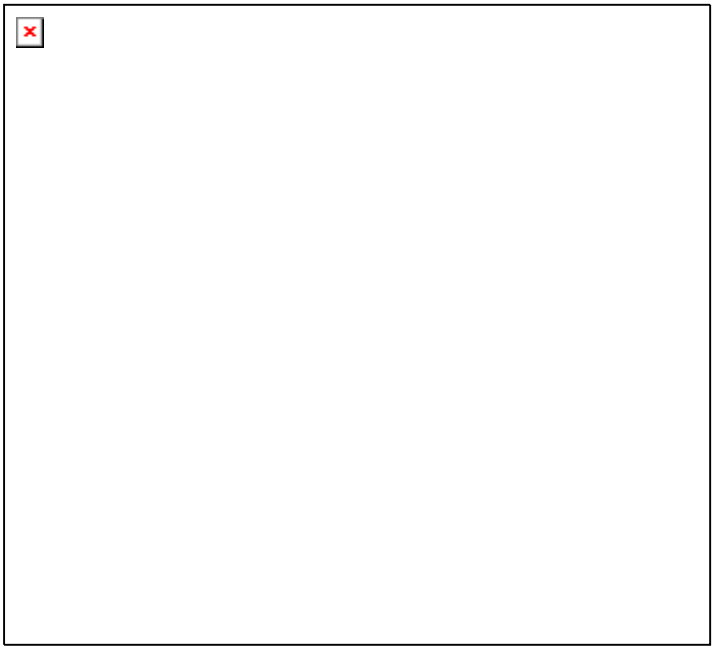
Place the gasket and upper flange on top of the fender, with the flange markings toward the right side (at 3 O'clock as viewed from above). Hold everything together with the stainless steel screws provided.

Remove excess RTV and clear the drain hole with a wire, etc. Install the vent and drain hoses to the lower flange as shown. Run the drain hose through the hole in the bottom corner of the well at the side of the trunk.

Pass the vent hose through the seal plate and connect to the aluminum tube that comes through the hole in the tank's mounting flange.



SECTION F:
SUSPENSION ASSEMBLY



FASTENER NOTES

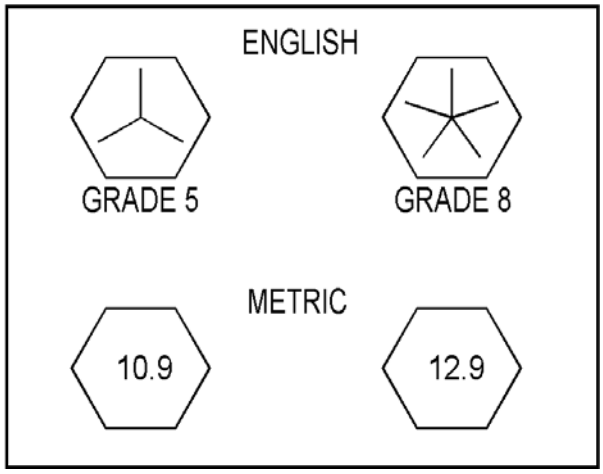
We include Grade 5 fasteners throughout our kit. They are quite strong enough for any abuse you can put your car through - and offer a bit more ductility than Grade 8 - which means they will bend before they snap.

Almost all the locking nuts in the kit are **Stover** style. Stovers are reuseable several times, unlike the nylon locking type. **However**, you must use **light oil** on the threads when assembling.

TORQUE SPECIFICATIONS

Use figures below only if unspecified in the relevant instructions. The torques listed are for **lubricated** threads or threads with liquid thread locker. All stover nut threads should be lubricated with light oil. The ¼" diameter stainless fasteners used to secure many of the body parts (hood, trunk, doors, etc.) should be torqued to a maximum of 8 lbft.

Bolt size	**Grade 5**	**Grade 8**
1/4"	9 lbft	13 lbft
5/16"	18	28
3/8"	31	46
7/16"	50	75
1/2"	75	115
5/8"	150	225
Metric	**Grade 10.9**	**Grade 12.9**
M8	25 lbft	29 lbft
M10	47	58
M12	83	100



FRONT SUSPENSION

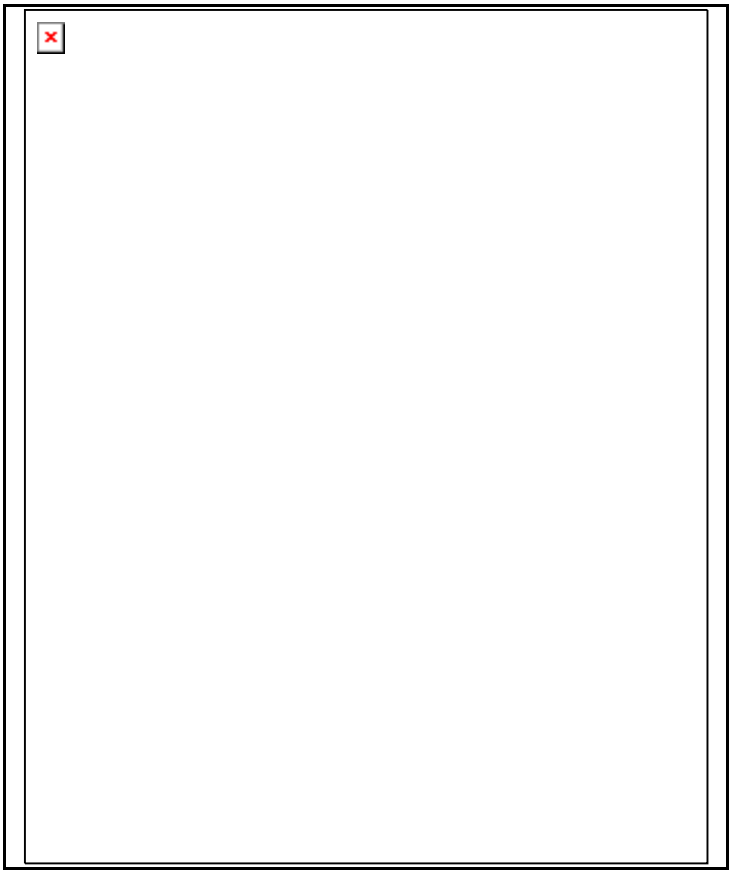
LOWER CONTROL ARM

Lubricate the chassis receptacles and the sides of the control arm bushings with silicone or petroleum jelly. Use a gentle oscillating motion when inserting the control arm into the mounts. Sometimes a plastic dead-blow mallet helps.

Insert the 5 1/2" x 5/8" bolt with a heavy washer through the front bushing into the chassis. Use a flat washer under the locknut.

Use the 3" x 5/8" bolt through the rear mount with flat washers and locknut. Torque to 50 ft-lb.

UPPER CONTROL ARM



d\fsusp

The upper control arms are installed with the ball joint hole **offset** towards the **front** of the car. The inner pivot axis is offset to the **outside** of the chassis mount. See above.

Install the upper ball joint as shown, sandwiching the control arm between the ball joint and the dust shield/boot/retainer. Torque to 16 lbft.

Install the arms with 3 shims front and rear for a preliminary camber setting. Leave the pivot shaft end nuts slightly loose. Tighten to 60 lbft after the suspension is at normal ride height.

COIL-OVER DAMPER

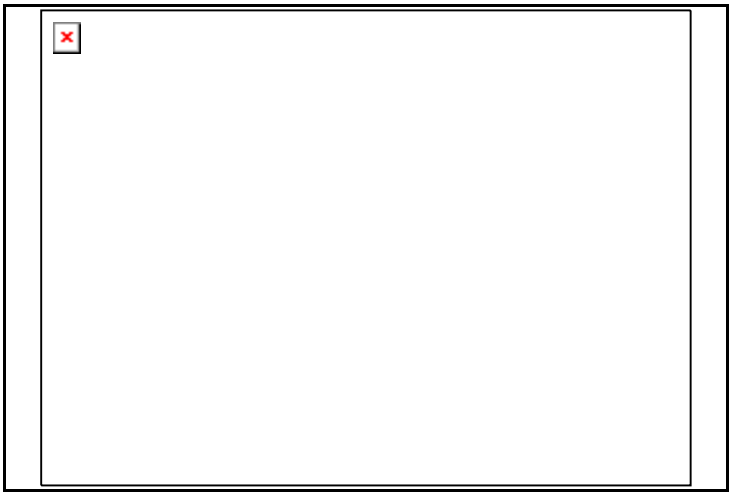
Spacers for the lower mounts are provided with the dampers. Use a washer on either side of the top mount. Secure the top with a 2 3/4" long bolt in from the back. A 2 1/2" bolt is supplied for the bottom attachment. Again, slide the bolt in from the back. The damping adjusting screw on the Spax unit goes toward the centerline of the car.

LOWER STEERING COLUMN

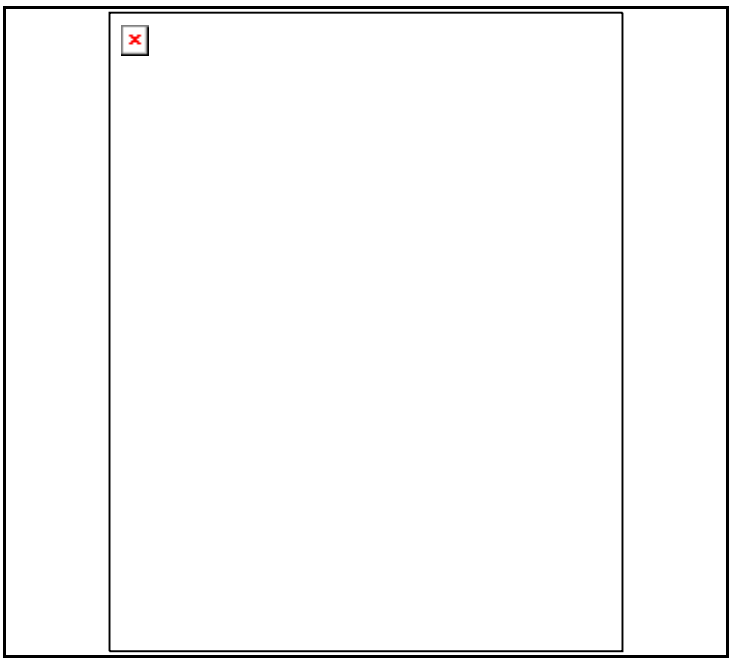
INSTALLATION

ERA STEERING GEAR (MODIFIED MUSTANG II)

Because the connection is splined, the intermediate column will fit no matter what the shaft orientation.



STEERING GEAR



b\steeringgearmt

Prepare the rack and pinion assembly for as described on page 49.

The assembly is held in place with 5/8”-18 x 4.5”L bolts. Degrease the threads on the bolt and in the chassis. Use a small amount of low-strength thread locker (i.e. Locktite Blue) on the threads.

Torque the bolts to 50 lbft.

STEERING KNUCKLE

See the illustration on page 96.

Install the knuckle on the lower ball joint with a washer (if needed to space nut for the cotter pin) and nut. Torque to 60 lb-ft. Tighten further to where the cotter pin can be inserted.

Rotate the upper control arm down, engaging the ball joint stud into the knuckle.

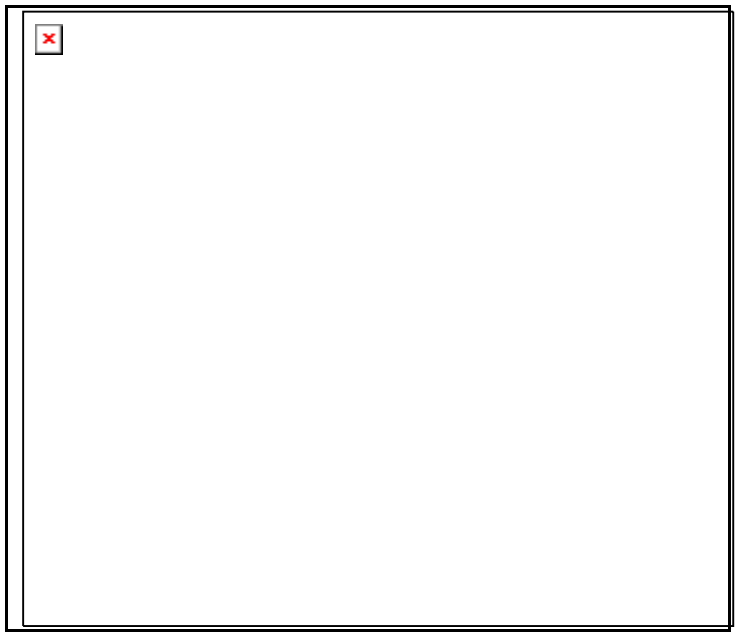
Install washer (if needed to space nut for the cotter pin) and nuts, torque to 40 lb-ft and install cotter pin at the next line-up.

Insert the tie rod stud into the steering arm from the bottom. Fit the washer and nut, torquing to 20 lb-ft minimum. Install the cotter pin.

*If you have trouble **greasing the ball joint**, loosen the Zerk fitting one turn.*

f\jfz1

12” BRAKES: HUB AND ROTOR MOUNTING



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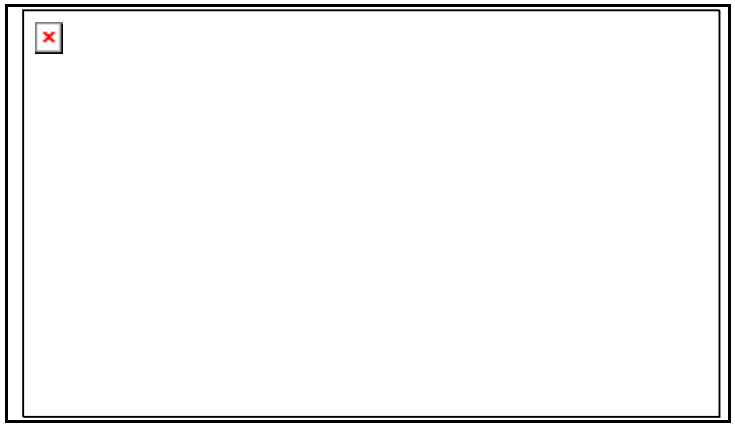
ANTI-SWAY BAR

Studs are already on the chassis. Clean any paint off the threads before installing the washers and nuts. The $^{15}/_{16}$" front bar is mounted under the front frame extensions, just behind the radiator.

- Bolt the bar in place with the rubber/urethane bushes and clamps. The link holes slant up toward the outside.
- Install the connecting links between the tab on the lower control arm and the pads on the ends of the sway bar.
- Tighten the link bolts so that the rubber bush expands to the diameter of the cupped washer. Do not over-tighten.

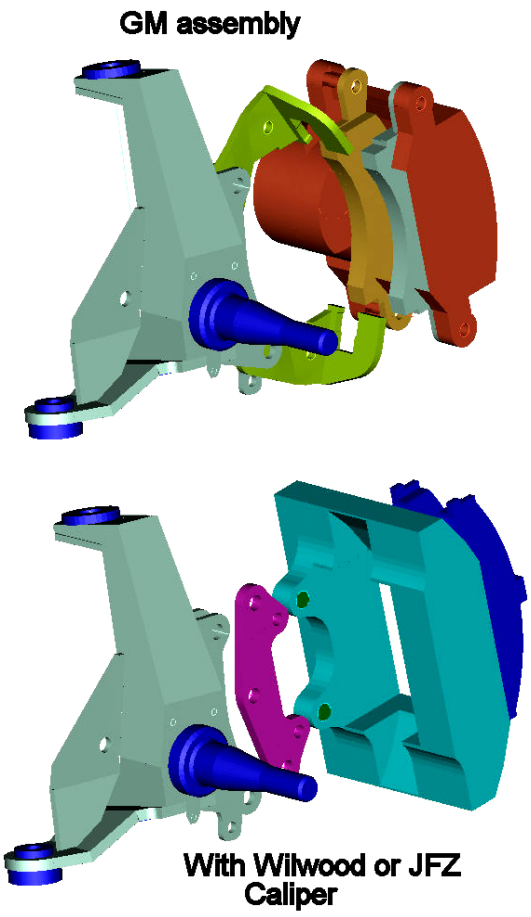


e\fswayb

ROTOR/HUB

GM-based Upright (through chassis 2086)

d\fhubasb



Late design with custom uprights

GENERAL INSTALLATION

Parts are listed on page 21.

Pin drive: If the rotor is not already installed on the pin drive hub, **torque** the drive pins to 35 lb-ft (with high-strength thread locking compound, i.e. Locktite® red) and the nuts to 35 lb-ft.

If you ever need to remove the pins, they will have to be heated to 300 deg. to weaken the bond. ***Excessive heat*** *will weaken the pins.*

Always grind the rotor after installing the wheel bearing races. If you don't have a special driver for the races, let the auto machine shop install them.

Clean off the **grinding dust** thoroughly before putting grease in the hub and installing the bearings and inner seals.

Install the **dust shields** onto the steering knuckles if desired.

Install the hub onto the stub axle with a special (tanged) washer and castle nut.

With new wheel bearings, torque the **axle nut** to 20 lbft. Loosen the nut and re-torque to 15 lb-inches., then tighten to the nearest cotter pin hole. Install the cotter pin through the access hole in the side of the pin-drive hub.

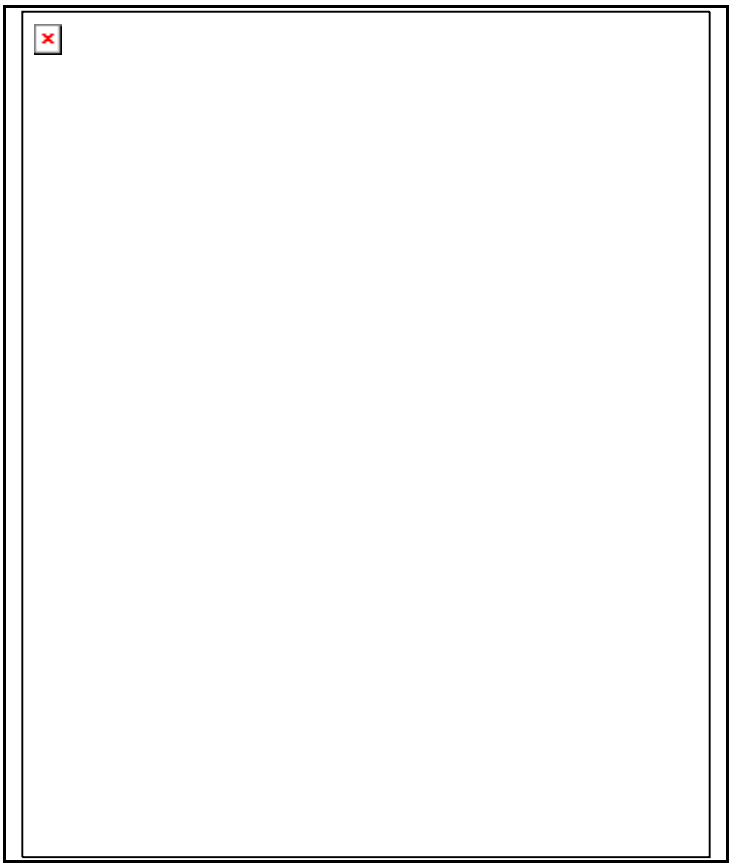
Install the brake calipers and pads using new hardware kits. Use **silicone grease** on all sliding surfaces.

Connect the brake line to the caliper, using the supplied banjo bolt and copper washer. If you still get seepage past the copper washer, but the seat is not too bad, you may use a special sealing washer available from Earls or E.R.A.

REAR SUSPENSION, JAGUAR-BASED

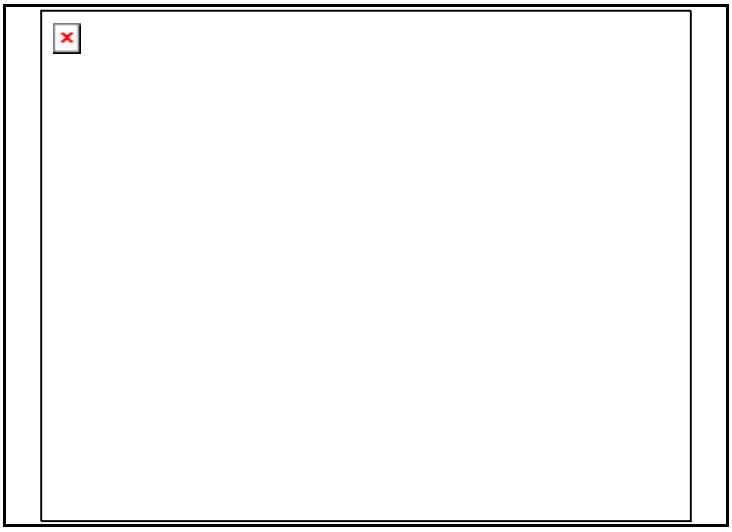
XJ COMPONENTS IN E.R.A. SUBFRAME

Thread the trailing arms onto the rod ends (with jam nuts) already installed on the lower control arms. Thread on until one or two threads show. Leave the jam nuts loose.



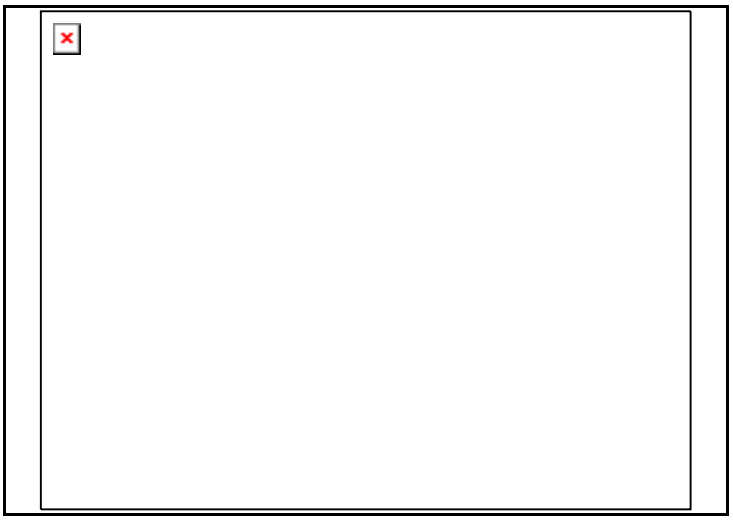
f\rearsusp

Raise the rear suspension assembly into position with a floor jack, guiding the forward ends of both trailing arms into the brackets on the sides of the frame. Don't install the bolts yet.



f\tralarm

Lubricate the insides of the upper chassis brackets with lithium grease so that the sides of the rubber bushing will slide into them. Guide the suspension assembly into the chassis brackets. Using a little light oil on the threads, install the $^{5}/_{8}$" bolts with flat washers, but don't tighten yet.



d\eracage

Note that the trailing arm bushing is **angled** slightly relative to the trailing arm tube. See the bottom of the illustration on page 99.

On one side of the car: Rotate the trailing arm so that the bushing angle matches the chassis bracket. Hold the bushing against the inside of the chassis bracket and sight through from the outside hole. Use a large screwdriver to move the assembly so that the sight is straight into the threaded portion of the chassis bracket.

Slip the aluminum spacer between the outside of the trailing arm bushing and the chassis bracket. See the illustration above. Slide the $^{1}/_{2}$" x 3" bolt through the flat washer, upper hole in the bracket, spacer and trailing arm bush, engaging the (locking) threads in the chassis. No lock-washer is necessary.

Move to the trailing arm on the other side of the car. Sight through the hole in the chassis and determine whether the length of the trailing arm will have to be adjusted. Screw the trailing arm in or out on the rod-end as necessary.

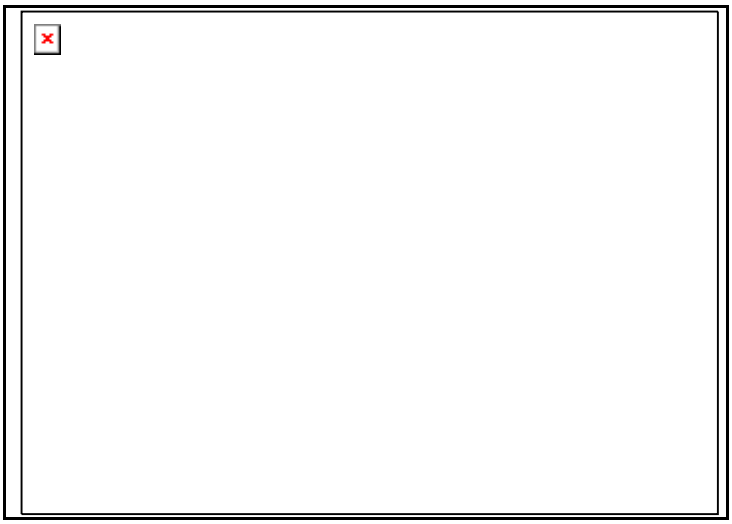
If the assembly does not line up perfectly, pry or pull on the hub carrier to shift things around while installing the spacer and bolt. If the holes do not exactly line up, grinding a taper on the bolt may make it easier to get the threads to start. Torque the bolts on both sides to 45 lb-ft.

Tighten the upper pivot bolts to 90 lb-ft.

Connect the brake flex-line to the bracket on the chassis.

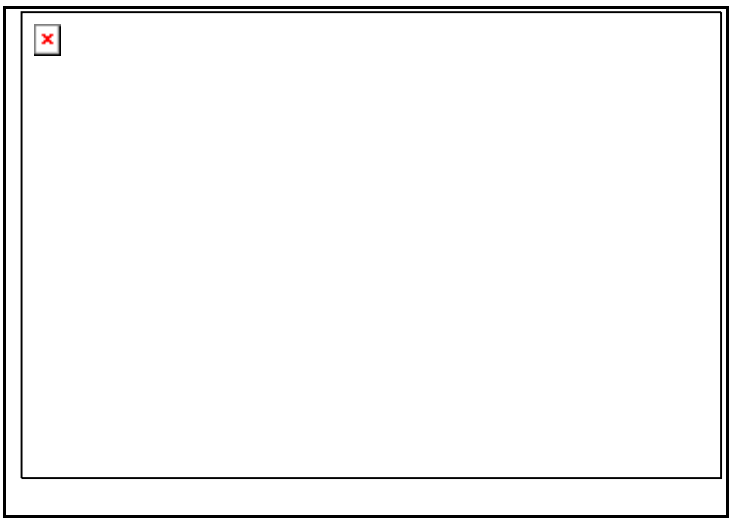
XKE HANDBRAKE LEVER AND CABLE

You can use then entire **XKE** handbrake cable linkage as shown below.



XKE COMPENSATOR

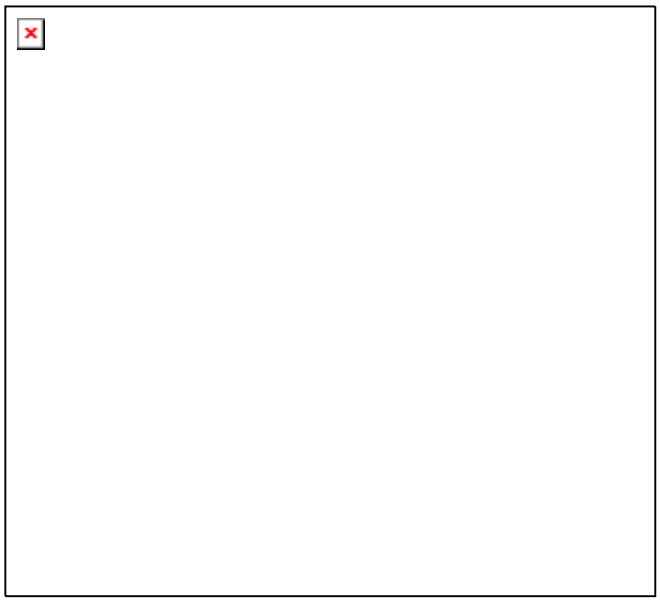
Modify the Jaguar handbrake compensator linkage on the differential as described on page 41.



ERA COMPENSATOR

Attach the front end of the cable to the handle by slipping the cable up into the slot in the protruding boss and attaching the bracket on the end to the bottom of the operating lever with a clevis and cotter pin.

Bolt the handbrake lever to the bracket on the chassis.



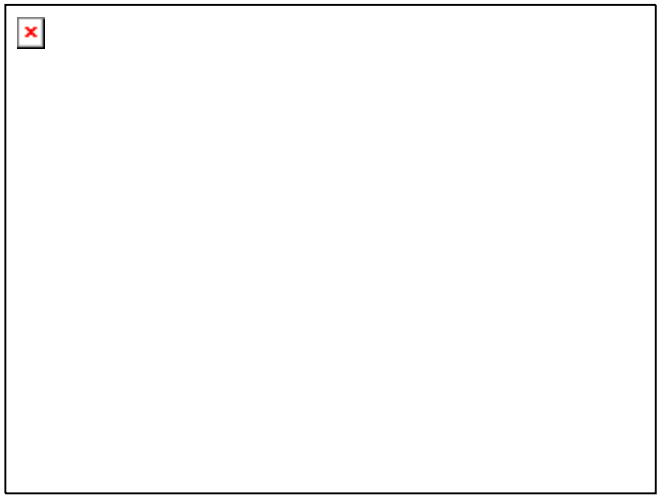
Attach the other end of the cable to the compensator lever on the suspension cage:

Slip the cable into the slot in the block attached to the lower lever of the compensator.

Screw the threaded end of the cable into the hole in the block.

Attach the bracket on the cable end to the other lever of the compensator. Do not tighten the lock nut.

Secure the cable to the <u>outside</u> of the driveshaft hoop with a tie-wrap.



Adjustment

Fully release the handbrake lever. Adjust the cable length by screwing the threaded end into the block to a point just short of where the handbrake operating levers on the calipers begin to move. Check the adjustment by pressing each operating lever at the same time towards the calipers. While doing this, observe the levers of the compensator on the cage - if they move noticeably, then the cable is too tight. To prevent binding, some slack should be obvious.

Check that the cable will not come in contact with the driveshaft at any time.

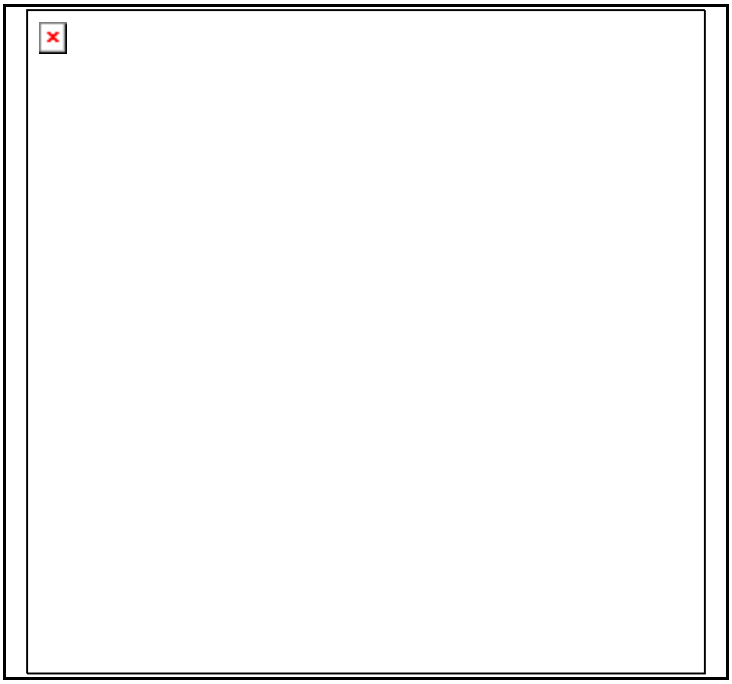
The cable passes through the right block and connects to the left lever. See page 41.

Adjustment

Fully release the handbrake lever. Adjust the cable length by screwing the threaded end out of the block to a point just short of where the handbrake operating levers on the calipers begin to move. If the handbrake lever movement is excessive, adjust the cable at the right block fitting.

ANTI-SWAY BAR

The $^{3}/_{4}$" rear anti-sway bar mounts on the rear face of the crossmember just in front of the rear subframe



d\rswayb

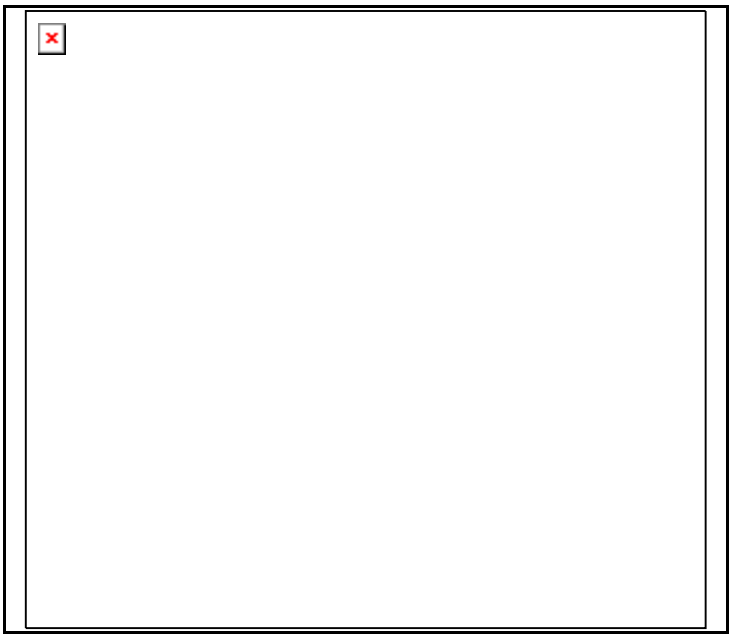
The chassis is threaded for $^{5}/_{16}$" USS bolts. If you meet resistance when installing the bolts, chase the threads in the chassis. *A broken bolt inside the frame is difficult to fix.*

Bolt the anti-sway bar to the chassis crossmember using the rubber bushings and clamps. If there is a jog in the bar, the center offset is to the rear and down with the arms extended under the suspension control arms.

Clamp the axle brackets around the Jaguar control arms. Position them behind or just to the inside of the trailing arm rod ends as shown.

Install the links between the axle brackets and the ends of the anti-sway bar. Tighten the link bolts so that the rubber bush expands to the diameter of the cupped washer.

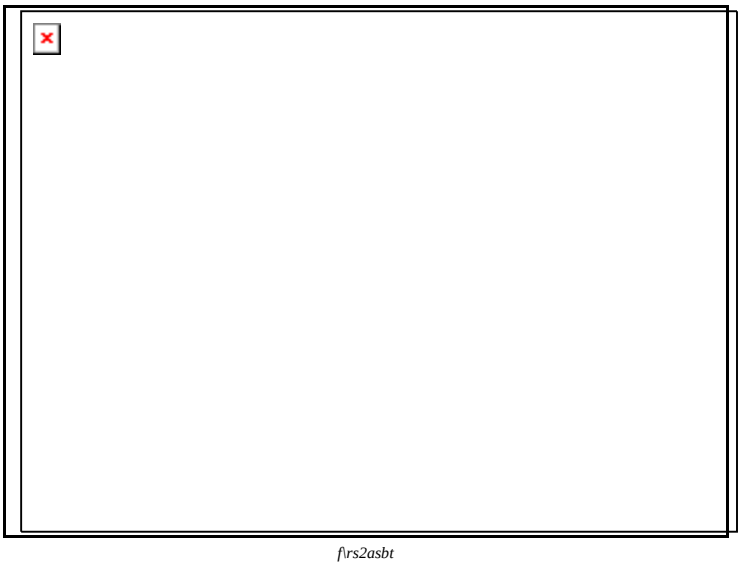
REAR SUSPENSION, E.R.A. DESIGN



See the other assembly information starting on page 43 for more diagrams!

INSTALLATION

Adjust the upper trailing arm length to 10.3" between rod end centers, leaving on of the jam nuts loose. Insert a $^{1}/_{2}$" x 2" HCS from the **outside** of each vertical chassis rail through the lock and flat washer and left hand threaded rod end. For extra safety, use a medium strength (i.e. blue Locktite) thread locker. The chassis sleeve is internally threaded. Tighten to approximately 60 lb-ft.



f\rs2asbt

Adjust both lower trailing arms to 15.3" between the centerline of the front bushing and the center of the rod end, leaving the jam nut loose.

Attach the upper trailing arms to the upright extensions.

Support the chassis with jack-stands so that there is at least 19”-20” between the spare tire well bottom and the floor. This will allow you to fit the assembly on the jack and still slide it under the car from the back.

Carefully jack the assembly so that the upper mounts engage into the chassis brackets. Slide the $^{5}/_{8}$” x 4.5” HCS with a flat washer through the chassis and rear subframe bushing. See page 99.

Start the threads with an air wrench or a ratchet. There is a welded-in stover nut on the inside of the chassis bracket, so no lock washer is necessary.

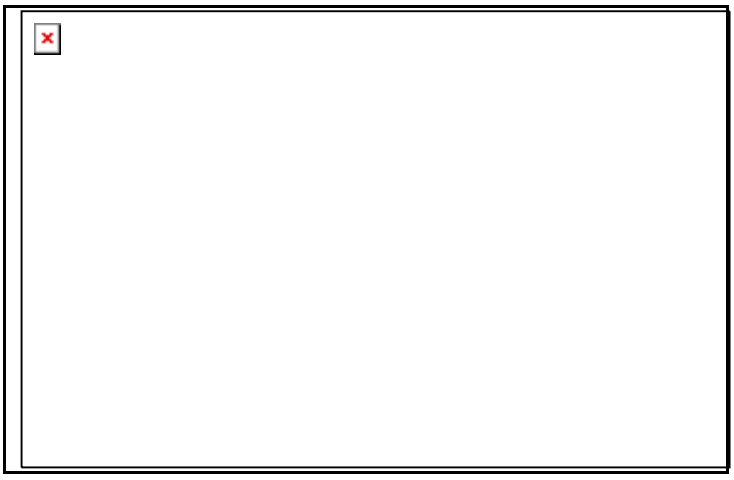
Rotate the subframe forward until the front mounts (see page 46) line up horizontally with the holes in the chassis crossmember. Start a couple of the allen-head cap screws ($^{1}/_{2}$"-13 x 1 $^{1}/_{4}$") to confirm the alignment. If there is a gap, use shims fill it. Tighten the front mount bolts and the cross-shaft nuts.

Attach the lower trailing arm (bushing end) to the **lower holes** on the chassis brackets. Note the slight angle of the bushing. Tighten upper bolts.

See page 99 for trailing arm installation.

ANTI-SWAY BAR

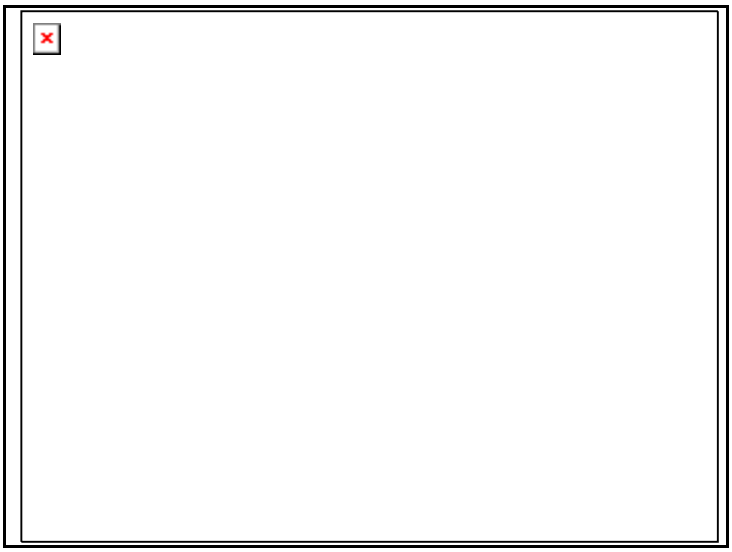
Set the slider about 1.5” from the end of the bar as a prelimary adjustment.



D\rerasbmt

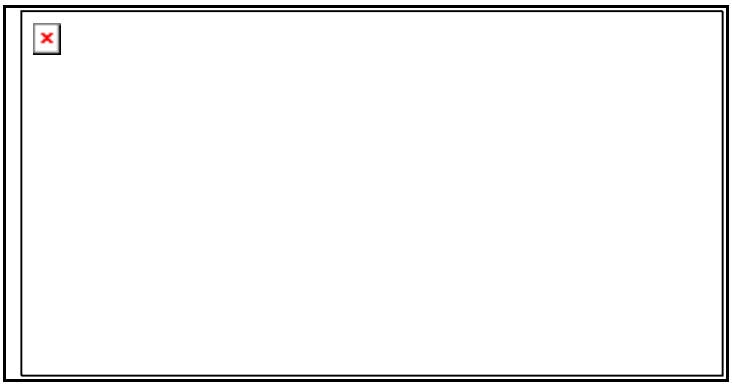
EMERGENCY BRAKE

Attach the emergency brake cables and balance bracket as shown. The front cable is attached to the handle as shown on page 100.



f\eraeblay

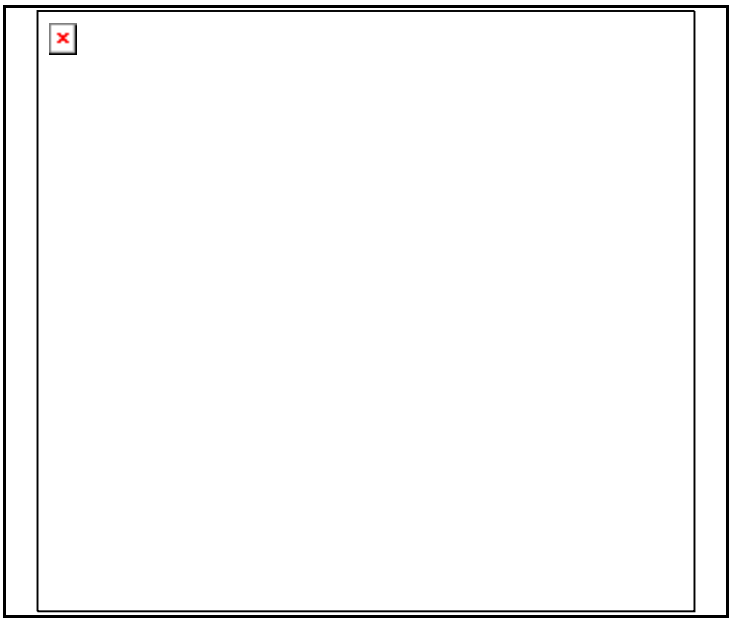
SAFETY STRAP:



d\drvhoop

Install the strap into the holes on the chassis support below the driveshaft and bolt into place. If you have the **ERA rear suspension** and are using the emergency brake, see the diagram on page 102.

BRAKE AND CLUTCH PEDAL



d\brpedal

INSTALLATION

If necessary, clean and grease the needle bearings in the chassis and in the brake pedal.

Slide the pivot shaft through the chassis bearings with the splined end toward the inside. If the engine is installed, the shaft must be installed from the outside of the chassis.

Install the thrust washer(s), brake pedal, and clutch pedal onto the shaft. Secure the clutch pedal with the shoulder screw.

Install the clutch throw-out arm onto the splined end of the shaft. Orient the throw-out arm approximately opposite the pedal. See the illustration on page 137.

To adjust the orientation of the clutch arm, change the length of the connecting rod between the clutch pedal throw-out arm and the clutch master cylinder:

Remove the retaining clip and the clevis pin.

Loosen the jam nut at the clevis. Turn the threaded rod to change the length as necessary.. When finished, tighten the arm set screw.

For **balance bar** parts installation, see page 142.

Clutch height adjustment is covered on page 104.

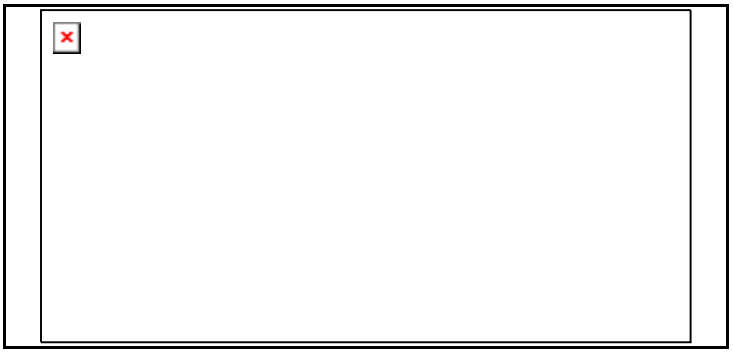
BRAKE PEDAL HEIGHT

Master cylinder installation is described on page 61.

For people of average height, set the distance from the rear of the pedal face to the forward part of the foot-box to about 7". If you are much taller or shorter, you may move the pedal up to $^{3}/_{4}$" forward or backward as needed.

If even **more adjustment** is required, a $^{7}/_{8}$" bore Tilton cylinder can be substituted for the BMW **clutch master** cylinder. A new clutch hose is also required. Special Order Only.

ADJUSTMENT



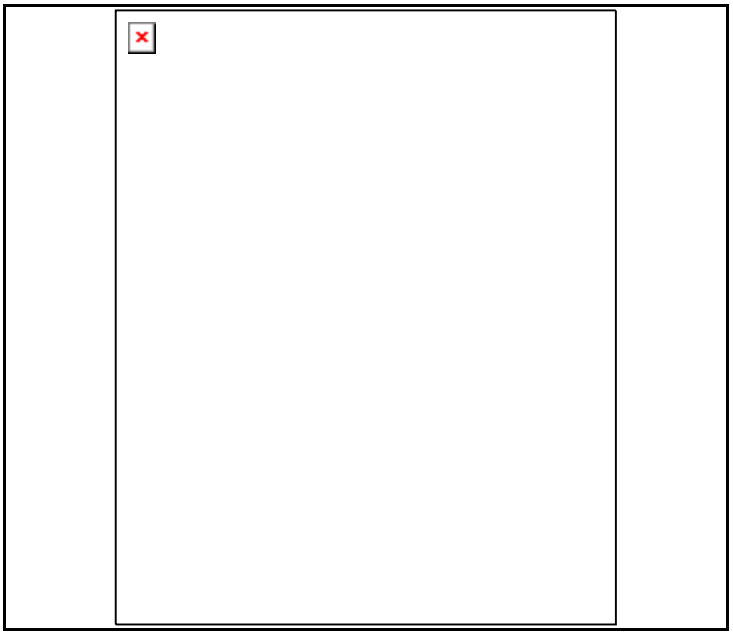
d\braklink

Because the front brake wheel cylinders require more fluid than the rears, the balance bar is always set up with the outside push-rod $^{1}/_{4}$" longer than the inside one. There are flats machined on the one side of each connecting rod end. Install the rod ends on the balance bar with the **flats toward** the balance bar housing. See above and page 143.

NOTE ON THE BRAKE BALANCE ADJUSTMENT

*The rod **length** has no effect on the front/rear brake bias (which brakes lock first). If necessary, **the bias can be adjusted** as described on page 142.*

For a preliminary setting, adjust the outer rod so that there are $^{3}/_{4}$" of threads showing on the outer master cylinder rod, $^{1}/_{2}$" on the inner rod (with the jam nuts against the rod end.)



To change the **brake pedal height**, turn both threaded rods equally in or out.

Check the tightness of the brake lines and switch fittings.

You can temporarily Install the brake cover box.

The brake or clutch pedal face angle can be changed with the top stop screw. *See page 103.*

CLUTCH PEDAL HEIGHT

See page 103 for parts assembly

The clutch pedal face should be approximately even with the brake. If your clutch pressure plate requires more travel than normal, you may need to keep the pedal face higher, or, alternately, use a larger clutch master cylinder. A1" Tilton master cylinder can be installed on the stock bracket, *but is rarely necessary*. Almost all **clutch release problems** are the result of incorrect installation or incompatible parts. Stock linkage and hydraulics give approximately 3/4" throw at the outer end of the fork. See page 137.

ADJUSTMENT

The throw-out arm angle can be changed to raise or lower the pedal:

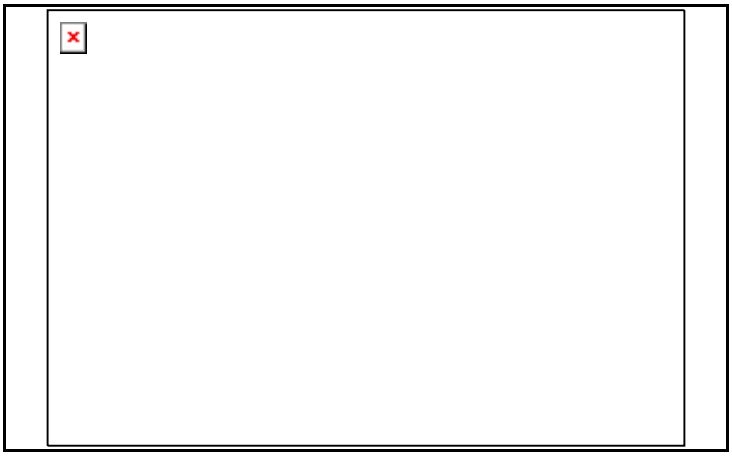
- Loosen the retaining bolt and slide the arm off the spline. It may be necessary to disconnect the clevis from the arm.
- Have someone hold the clutch pedal at the desired height and re-install the arm. Tighten the retaining bolt.

You can make small height changes by changing the length of the connecting rod.

Clutch bleeding and adjustment are described on page 137.

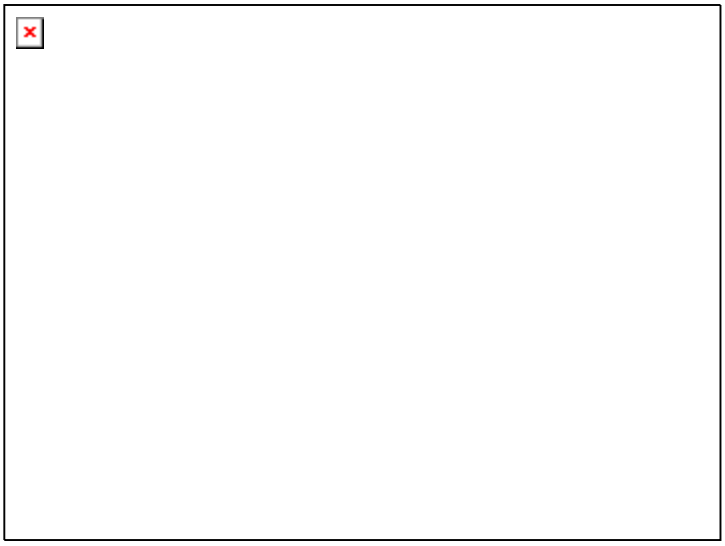
DEAD PEDAL INSTALLATION

Hold the bracket at the desired height against the side of the footbox and mark for the holes. Drill through the footbox and steel tube with a 3/16" bit. Secure the bracket with a #12 Tek screw.



D\deadped

SECTION G:
BODY/INTERIOR



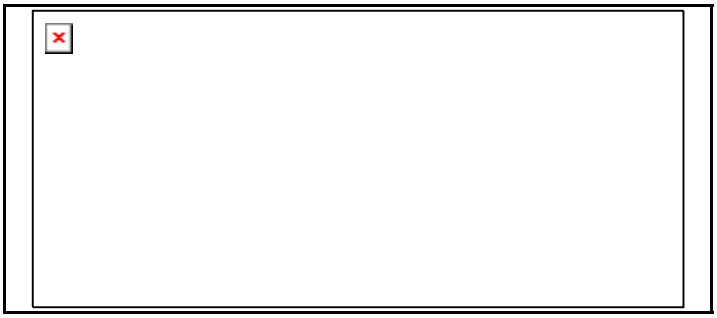
WINDSHIELD WASHER

The optional windshield washer uses a manual pump like the original Cobra. If ordered with the kit, the fluid container and the pump unit are installed at the factory. If you are retrofitting your car, the reservoir is mounted on the right front splash panel as shown below.

Washer

Mount the washer jets into the predrilled holes on the cowl, jet noses aimed toward the right.

If you are retrofitting, drill the holes for the jets 2" inside and $^{1}/_{2}$" forward of the center of each of the wiper holes. It may be necessary to grind the underside of the body for thread clearance.



Mount the pump in the dashboard. The location is shown on page 109.

Pass the plastic tubing from the fluid container cap through the $^{5}/_{16}$" hole in the firewall.

Cut the tubing supplied into pieces to connect components as shown above. Leave a little extra length so that the tubing can be secured to the wiring harness and/or the wiper tubes with wire or tie-wraps.

WINDWINGS AND SUNVISORS

(Pre-installed) The windwings and sunvisors can be attached to the windshield frame before or after the windshield is mounted on the car.

***Caution**! Be careful when installing the screws into the windshield frame. If the screws contact the glass, they will break the windshield. Check the screw length and clear out the holes before starting. Install using the diagram below.*

WINDWINGS

Remove the bottom and third screws holding the windshield frame to the windshield.

e\windwing

Compare the length of the two new screws provided with the original screws by inserting into the mounting blocks on the windwing mounting brackets. Grind off any excess length. **If the screw hits the glass, the windshield will be cracked. Double Check.**

Install the screws with medium strength thread locking compound.

SUNVISORS

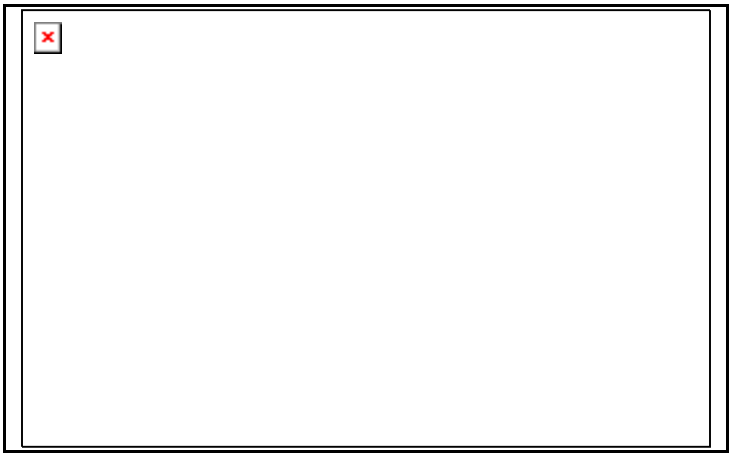
(Pre-installed) With a small stiff wire, clean out the holes tapped in the upper windshield frame.

Push the wire to the bottom of the hole and mark where it is flush with the windshield frame surface. Check each hole to make sure they are all the same.

Check the hole depth against the length of the chrome 6-32 oval head screws used to attach the angle brackets to the windshield frame. Shorten the screws if necessary. **If the screw hits the glass, the windshield will crack! Double Check.**

Attach the angle brackets to the windshield.

Loosen the sunvisor mounting block set screws. Slip the blocks onto the angle brackets and tighten the set screws.



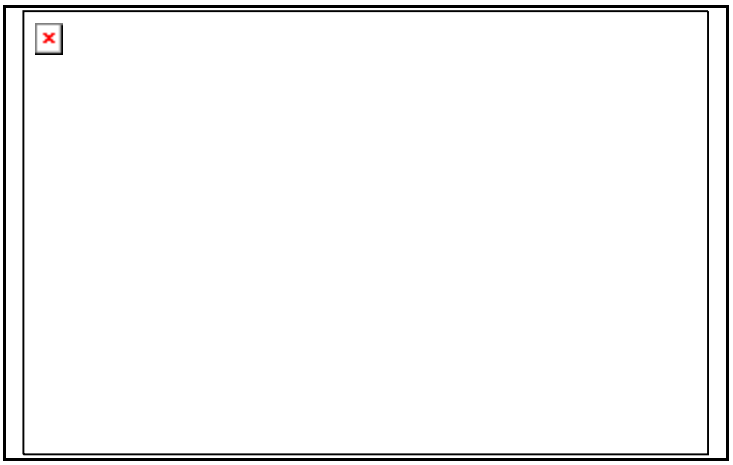
e\sunvisor

WINDSHIELD

Slip the aluminum trim plates onto the windshield posts with the convex side up and the screw holes to the outside.

Fill the underside of the trim plates with sealer or ribbon-type caulk to make a water tight seal between windshield post and body.

Lower the windshield into place. Replace any shims between the posts and the chassis and install the large flat washers, lock washers and bolts. If you are going to use side curtains, leave the bolts loose to adjust the windshield rake to match the front edge of the curtains:



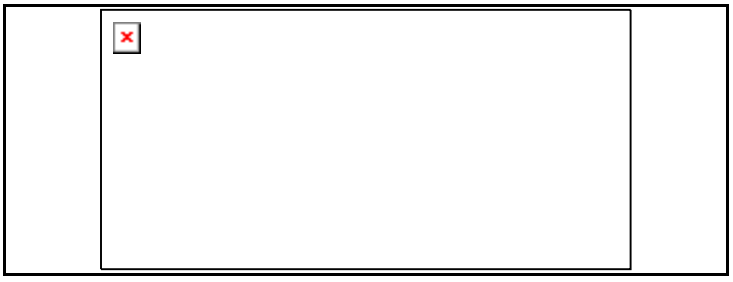
e\windshld

WITH SIDE CURTAINS

See curtain installation on page 135. Angle the windshield back so that the front edge of the side curtains slip inside the windshield posts and are parallel with the windshield. See the illustration on page 107.

Tighten the outside mounting bolts and fasten the center bracket with two #8 self-tapping screws.

Trim the bottom channel gasket at both ends as shown.

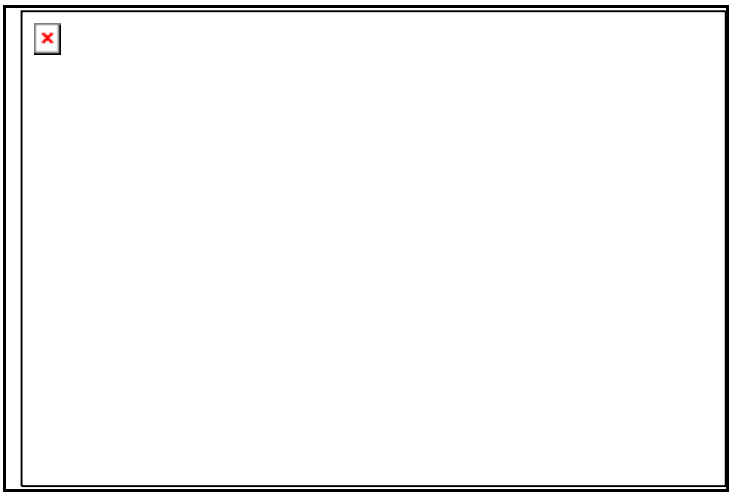


HEATER/DEFROSTER

*Close the water **shut-off valve** when the heater is not required. The heater will radiate some heat even if the fan is off and the doors shut - definitely not necessary during those hot and hazy days.*

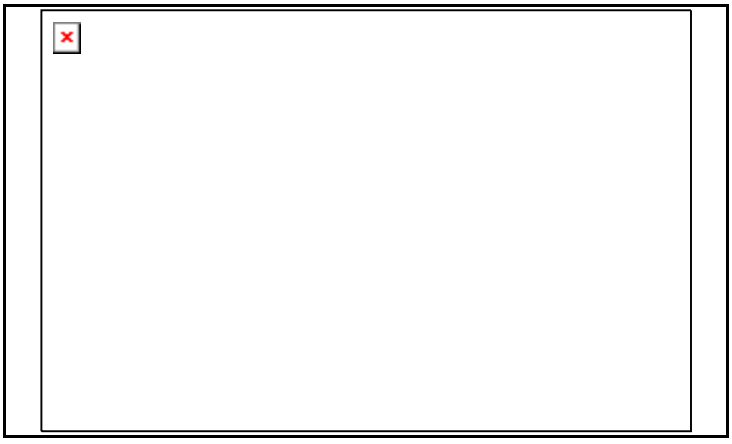
Use two Gates 28472 hoses or their equivalent to connect to the engine. The length must be trimmed.

When ordered with the E.R.A. kit, the optional heater/defroster system is already mounted as shown below.



e\heater1

The E.R.A. 427SC uses what would have been the original heater switch for the radiator fan over-ride function. You may install another toggle switch at either end of the row of toggles, or drill a hole in the bottom of the heater case and mount the two-speed switch supplied with the heater there (the wires must be re-routed, but this makes a very clean installation.)



wiring\heat2sp

TO RETROFIT:

Use the template included with the heater to drill holes in the firewall.

Bolt the heater in place as shown, using nylon locking nuts. Connect the motor ground wire to the steering column mounting bracket or some other ground.

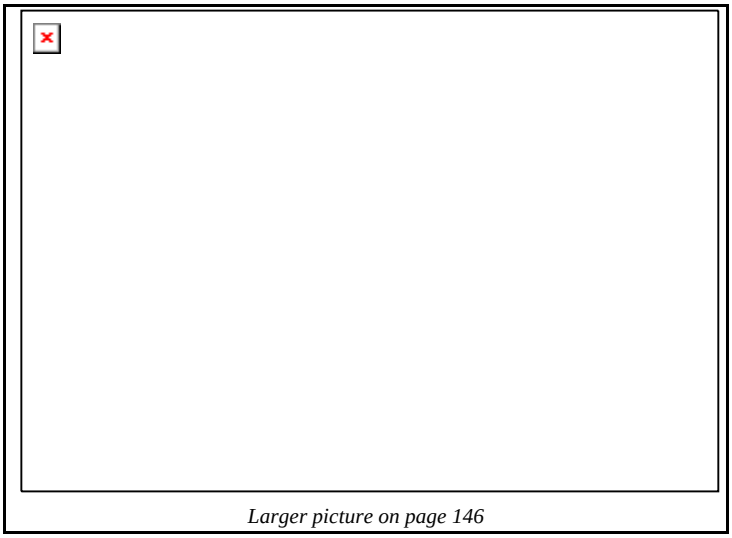
Install the water shut-off valve in the water outlet of the intake manifold ($^{3}/_{8}$ NPT fitting). Use Teflon joint compound or tape on the threads.

Cut the heater hoses to length. Connect the lower tube on the heater (inlet) to the shutoff valve. Connect the upper heater tube (outlet) to the fitting on the water pump.

Connect the blower motor wire to the dashboard harness as indicated in the wiring instructions. See the wiring hints above to use the two speed switch.

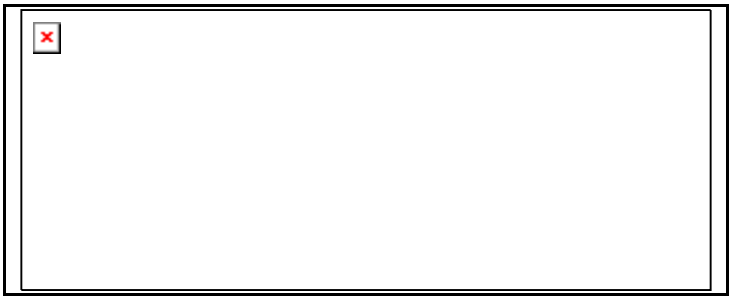
DASHBOARD

***Note:** With a heater installed, the oil temperature gage and ammeter are interchanged.



Larger picture on page 146

Install the wiper relay on the firewall before the dash:



The dashboard wiring connections can be done off the car, with the dashboard resting face-down on something soft. Follow the separate wiring instructions for individual connections.

Smiths gage notes: *The oil pressure line requires a ¼"-⅛" pipe reducer at the filter housing or block adapter. There is a fiber sealing washer attached to the gage to seal the gage end fitting.*

Small block*: The line enters the block just in front of the filter housing. You can use the extension that normally mounts the electric oil pressure switch or go directly into the block.*

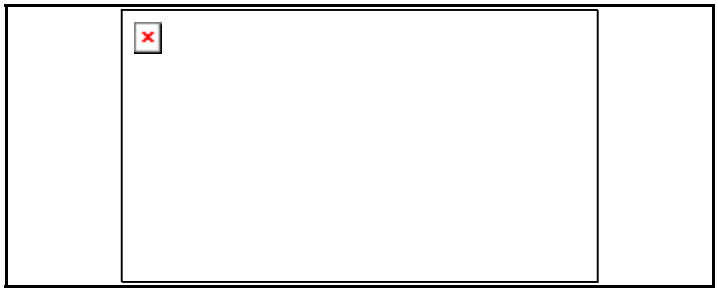
INSTALLATION

Remove the tape wrapping the fresh air cables and let the cables lay on the floor.

Attach the (optional) windshield washer tubing to the pump. Hold the dashboard in place on the body and loosely thread in the mounting screws and trim washers. Don't install the extreme right-hand screw and leave the rest of the screws loose so that the glovebox can be installed.

KNOBS

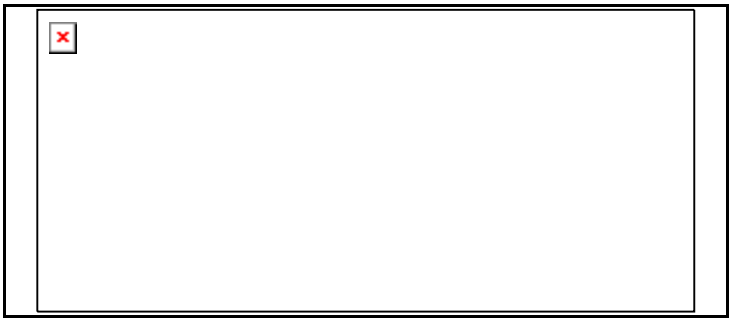
Note that the rotary knobs for the wiper and dash lights are similar but not necessarily the same. The retaining pin hole position must match the proper hole in the switch.



GLOVE BOX

*For **theft prevention**, you may want to put a **kill switch** in the glove box. See the wiring instructions for electrical details. Drill a hole for the switch in the upper corner of the vertical section of the box, next to the door.*

Use contact cement to line the bottom and sides of the glove box with the **fuzzy material** included with the carpet set.



g\glovebx

Also glue a strip of material on the underside of the rear box edge where it meets the dash to prevent it from rattling against the transverse dash support.

Holding the glove box with its forward edge tilted down and towards the front of the car, slip its trailing edge up and under the glove box opening lip of the dash. Be sure that the edge goes under the glove box door mounting screws.

Raise the rear of the glove box into place and install the final dashboard screw. Tighten all the dash screws to hold the glove box in place while you attach its rear flange with the self-tapping screws provided. (A ¼" ratchet with a long extension makes this job easier).

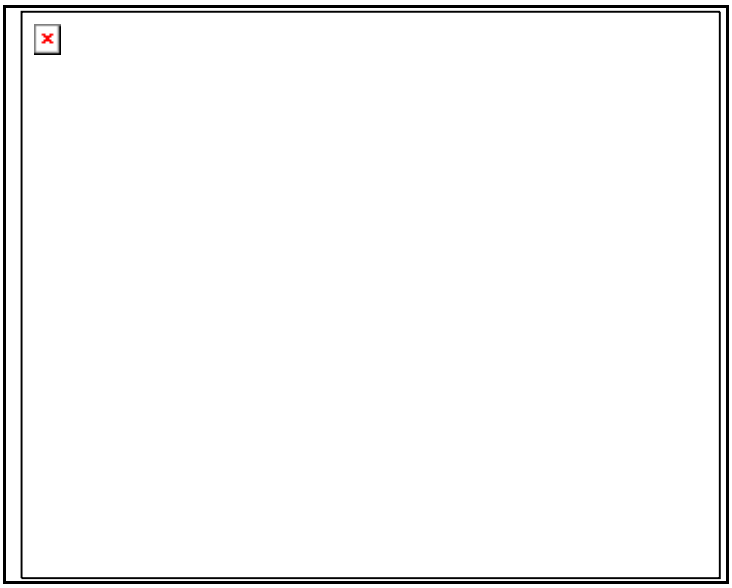
SPEEDOMETER CABLE

There are several possible speedometer cable and drive locations on the transmission. See page 13 for the right cable for your application.

*If you are using a **counter-rotating speedometer** with a Top-loader or Tremec transmission, a cable reverser must be installed on the speedometeer end of the speedometer cable. When installing the 90 degree adapter to the speedometer, see the notes on page 110. With the **Richmond gear transmission**, the reverser is integrated into the right angle drive adapter at the transmission.*

INSTALLATION, TOP LOADER

From the engine compartment side, slip the smaller (speedometer) end of the cable through the rubber grommet in the footbox.



e\spcable

Feed the other end towards the rear over the bellhousing and down the right side of the transmission.

From inside the car, pull the small end through the grommet. Align the square end of the cable and its receptacle in the guage , and tighten the retaining nut.

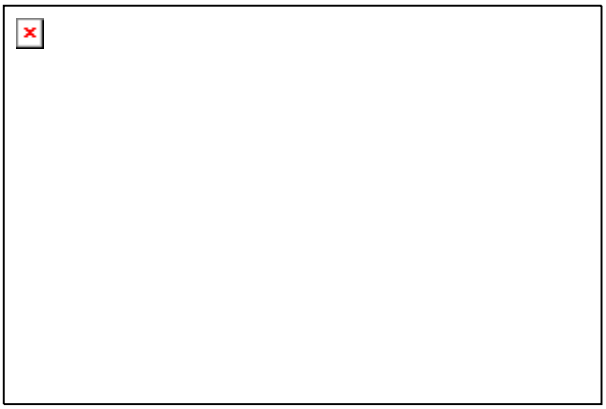
If the transmission drive is on the right side, run the cable through the hole in the hand brake lever mounting bracket. If the drive is on the left side (see page 111) , the cable must be kept from interfering with the shifting mechanism by attaching the cable to the side of the floor with clamps.

Secure the cable to one of the bellhousing top bolts.

CABLE FOR REVERSE-ROTATION SPEEDOMETER

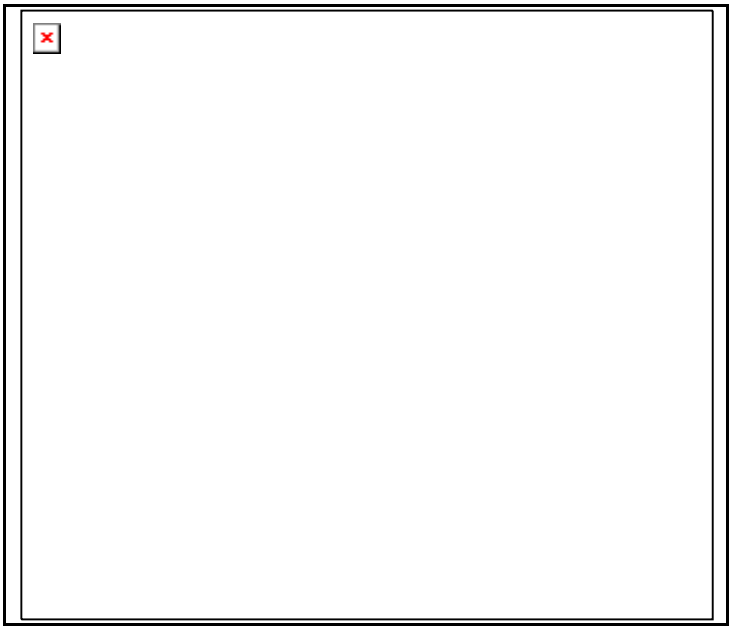
Some cables or right-angle drives have been known to have a square drive adapter that's too long where they go into the speedometer head. This will either cause the speedometer to malfunction - or the gear at the transmission to strip. Check clearance by disconnecting the cable at the transmission end and insuring that it turns freely. If not, either shorten the square drive where it enters the speedometer or add shims where the cable housing meets the threaded section on the speedo.

The illustration below shows the right angle drive for the reverse-rotation speedometer. A right angle drive for a clockwise-read speedometer will be the mirror image.



RICHMOND GEAR 5 SPEED

The transmission requires a right-angle-drive adapter installed as shown. The parts required are listed on page 13.



TREMEC TKO/500/600

The drive cable is also secured to the top of the mission case. See the previous section for the cable path.

BATTERY AND CABLES

FRONT MOUNTED BATTERY

See page 22 for battery and battery cable sizes and information.

e\batcabls

Attach the 24" battery cable to the positive terminal on the battery. Place the battery onto the tray with the posts oriented toward the rear of the car (this will put the positive terminal under the cowl).

Attach the other end of the cable to the right side of the starter solenoid.

Attach the 16" (ground) cable to the negative terminal of the battery. Attach the other end to the right rear intake manifold bolt together with the engine to chassis ground wire (See the wiring list). Attach the other end of the small wire to the firewall as shown in the wiring instructions.After putting grease on the bolt, tighten the hold down clamp.

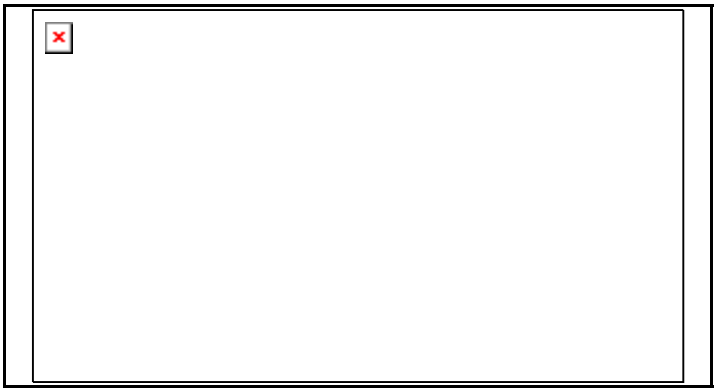
Attach the 24" cable with (eyelets on both ends) between the left side of the starter solenoid and the terminal on the starter.

REAR MOUNTED BATTERY

Mounting details are available at www.erareplicas.com/427man/index.htm.

The battery may be mounted in the trunk for more rear weight bias. ERA offers panels that close off the front of the trunk for this purpose. Inquire. Most states require that the battery be in a closed container to prevent spills and collect corrosive gases.

Run at least a 2 gage cable from the battery to the starter solenoid. Secure it with insulated clamps spaced less than 12" apart.. The battery can be grounded directly to the frame or at the bumper bracket.



Clamp the cable along the inside of the right frame rail.

Also ground the engine or transmission directly to the chassis with at least a **2 gage cable.** The TKO 600 is illustrated on page **Error! Bookmark not defined.**. The most convenient ground is usually from the transmission to the threaded insert in front of the X-member (where the transmission adapter is used with some transmissions).

STEERING COLUMN AND WHEEL

Prepare the triumph steering column as described on page 50.

Before the Triumph steering column is installed, check that the signal canceling cam on the steering column shaft is oriented correctly. See page 50.

ASSEMBLY

g\stcol

Lower steering column installation is described on page ***Error! Bookmark not defined.***.

Insert the upper column and housing through the hole in the dashboard, engaging the lower column as the upper one is slid in.

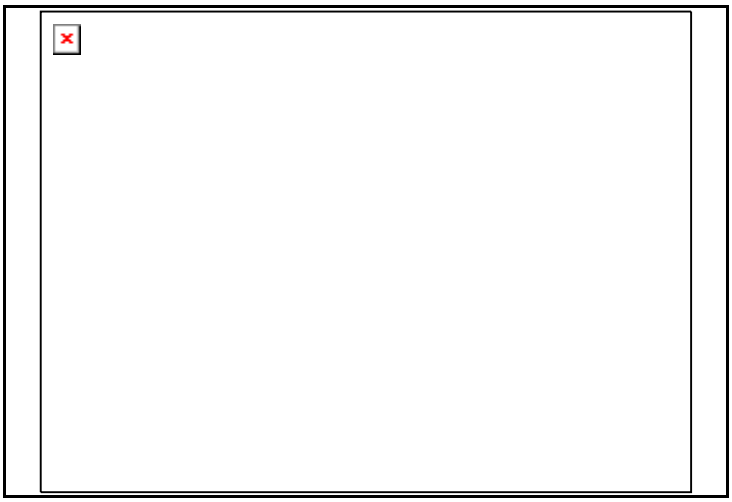
Align the flat of the lower column with the notch in the upper tube and fit the clamp over the column tube. Snug the bolts slightly but don't tighten.

Fit the bottom half (non-threaded) of the upper column clamp between the column and the mounting tabs on the transverse dash support.

With the top half of the upper clamp in place, insert the bolts from the bottom, through the relay bracket.

E.R.A. column: Install the switch onto the column housing. Original orientation was toward the passenger side of the car, but you may install it on the "conventional" side at your preference.

Bolt the steering wheel to the hub. The pattern is asymmetric - the parts will only fit one way. If the E.R.A. switch is too close to the steering wheel rim (which occurs with some of the flatter wheels), the switch arm may be bent slightly for extra clearance.



cob\man\wiring\swbend

With the road wheels straight, install the hub on the column with the washer and nut. Torque the nut to 25 lb-ft **only after the suspension is aligned,** and the steering wheel position is determined to be correct.

With the driver's seat correctly positioned in relationship to the pedals, slide the steering column and housing in or out to suit your driving position. If you are tall, you may want to add shims (and maybe longer bolts) between the dash angle bracket and the mounting block.

Move the steering column in or out relative to the housing until there is $^{1}/_{16}$"- $^{1}/_{8}$" clearance between the bottom of the hub and the top of the column housing or signal switch (E.R.A. column). Tighten all the clamp bolts.

Connect the steering column wiring (horn, signal lights, headlight dimmer) as shown in the wiring instructions.

Secure loose wires with cable ties or tape.

STEERING WHEEL REMOVAL

Carefully pry off the center cap, and remove the nut and washer.

While keeping rearward pressure on the steering wheel/hub, strike the end of the steering column forward with a brass or lead hammer. Be careful not to damage the threads. If that does not disengage the taper, use a steering wheel puller.

CENTER CAP

The optional cap is held in place with 3 clips. Be **very careful** not to scratch the back surface of the cap. It will show on the outside.

SHIFT LEVER

The shift lever boot and chromed trim ring are provided in the kit. A reversed shift lever can be purchased from E.R.A. or modified from Mustang parts. See page 47.

The shift lever may be mounted in several different locations, depending on your transmission. If your Top-loader mounting matches the diagram on page 15 or you have a Richmond Gear 5 speed, E.R.A. makes adapters to move the linkage to the proper position. Handles that bolt onto the linkage stub are available for the Tremec transmissions.

TUNNEL

If you are using a **backup light**, mount a switch on transmission actuated by the reverse gear lever. The wires can be attached to either terminal.

SHIFT LEVER HOLE

See page 15 and 48 for shift linkage details.

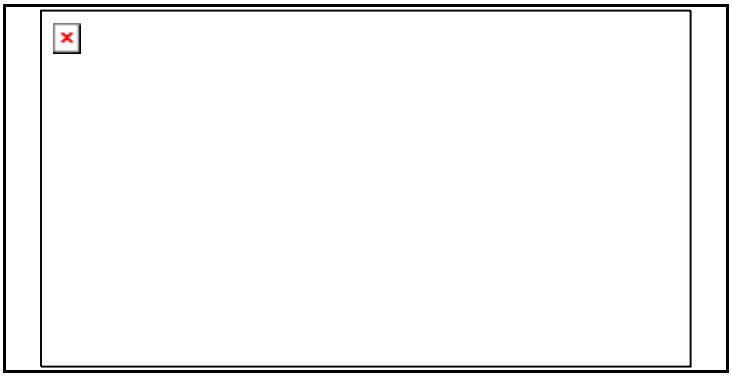
When the transmission is installed in the car, measure from the side and back to the base of the shift lever.

Temporarily remove the lever and mount the tunnel in the car. Mark the shift lever location on the tunnel. Cut the hole for the shift lever a little undersize, and refit the tunnel to check the location.

ACCENT TUBE HOLES

These non-structural tubes duplicate the look of the dash support tubes that were used on the original Cobra. Our tubes are held at the top by bolts, at the bottom by the grommets in the tunnel.

Locate and cut holes in the tunnel for the support tubes. Use a hole saw to make the 1 $^{1}/_{16}$" holes as shown. Paint the tubes gloss black and install after the dashboard is in place.



Eint\tunltube

The (optional) **ashtray** location is marked on the tunnel. Cut the hole slightly smaller than marked and file to fit. A snug fit is all that holds the ashtray in place.

INSTALLATION

With the tunnel held in place with the shipping screws, drill $^{9}/_{64}$"- holes 4"-5" apart along the length of the bottom flanges and through the floor. Also drill two holes, one on either side, through the vertical surfaces at the front of the tunnel near the top.

Enlarge the holes in the tunnel to $^{1}/_{4}$" so that the hold down screws will drop through.

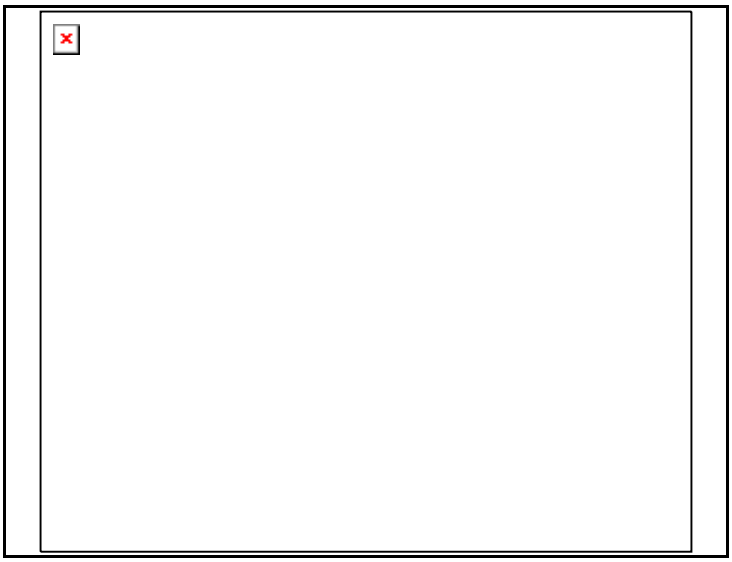
Insulate the inside of the tunnel. Use contact cement to fasten aluminum foil backed jute, foam or high temperature material (see page 29) on all surfaces except for the areas of overlap at the front edge and the bottom flanges. Check for adequate clearance along the left side of the tunnel adjacent to the shift linkage.

Glue low density foam weather-stripping (the same type used on edge of the wheelhouses) onto the bottom of the tunnel flanges.

Install carpet (page 120).

Removal (after car is completed)

- Remove shift lever, boot and bezel.
- Remove seats
- Remove dash support tubes
- Remove the rear bulkhead access panel.
- Remove screws along floor flange and lift the tunnel out.

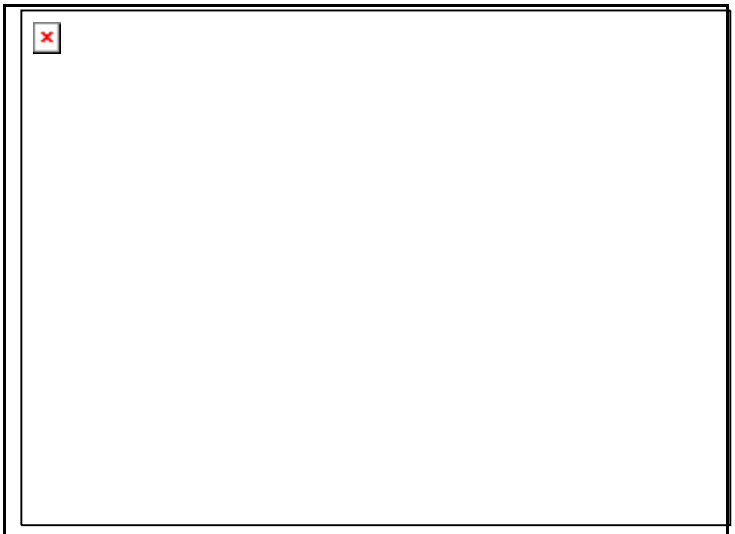


eint\tunnel

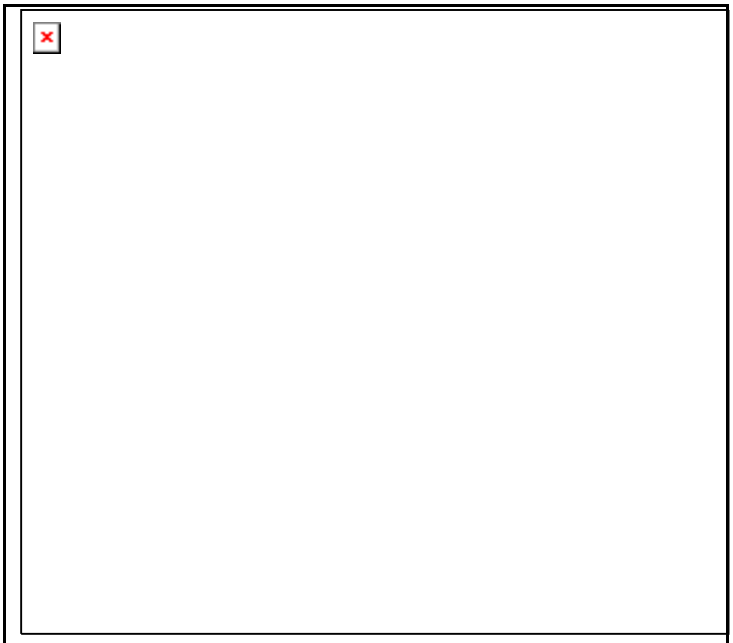
CARPETS

INTERIOR

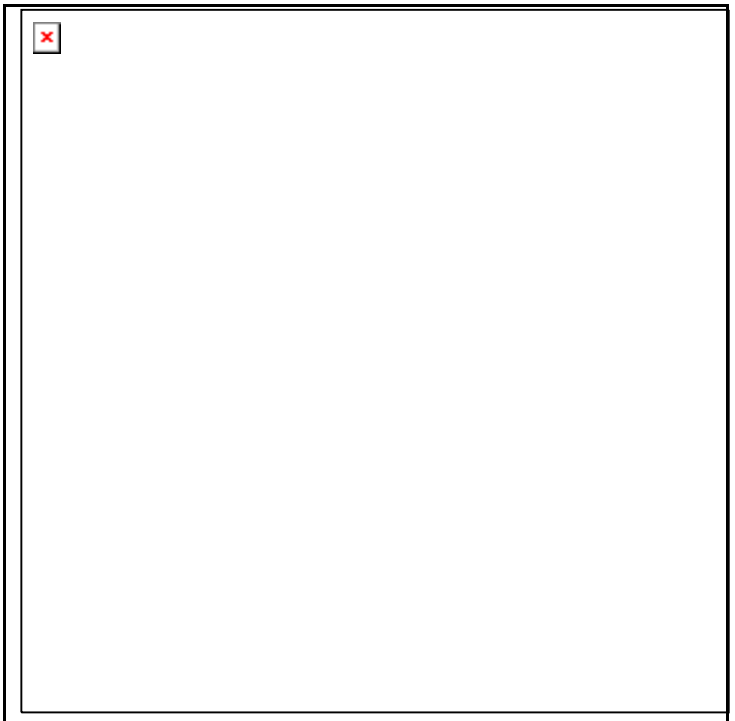
REAR PANEL



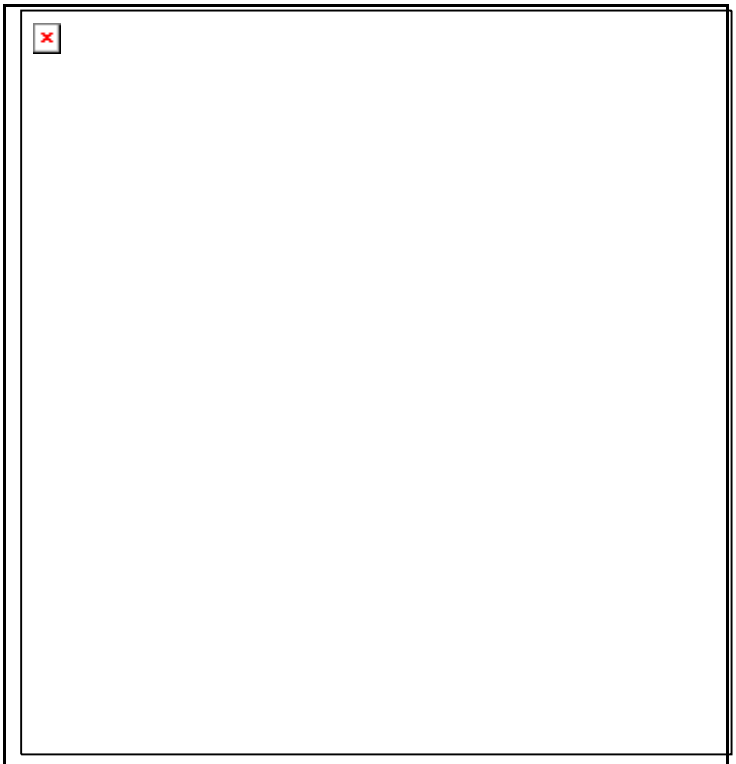
After masking the body, spray or brush contact cement on the panel areas and the back sides of the vinyl and carpet.



Install the side carpets, starting by lining up the corner(s) as shown.

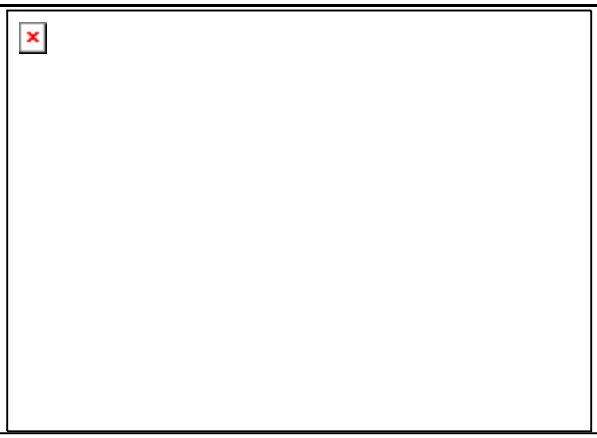


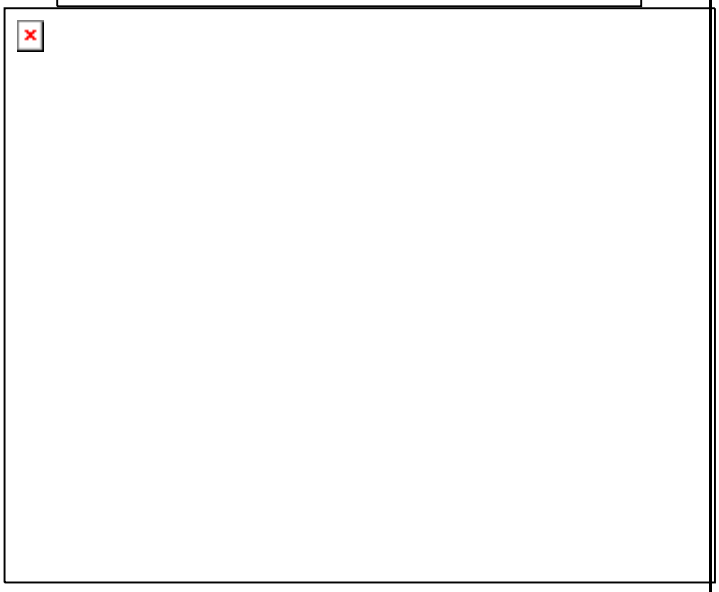
Install the vinyl on the central aluminum side panels. Trim even with the vertical edges and leave a short amount at along the floor.



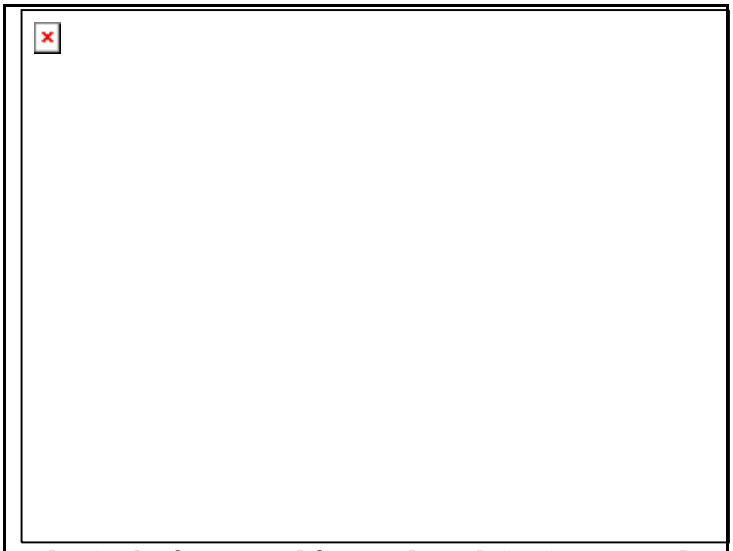
Carefully form the carpet over the wheelhouse bulge and push into the side and top areas. Trim off the excess material.

FOOTBOXES

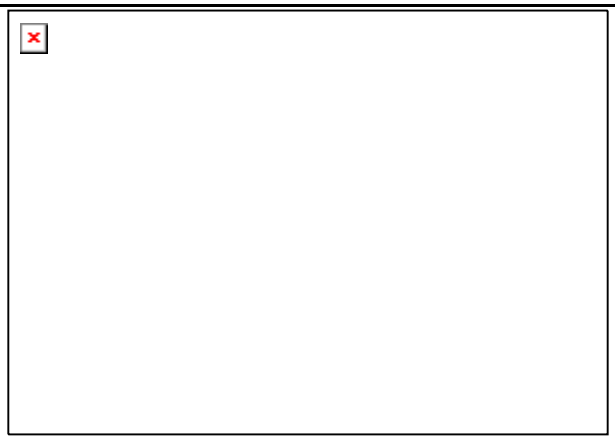


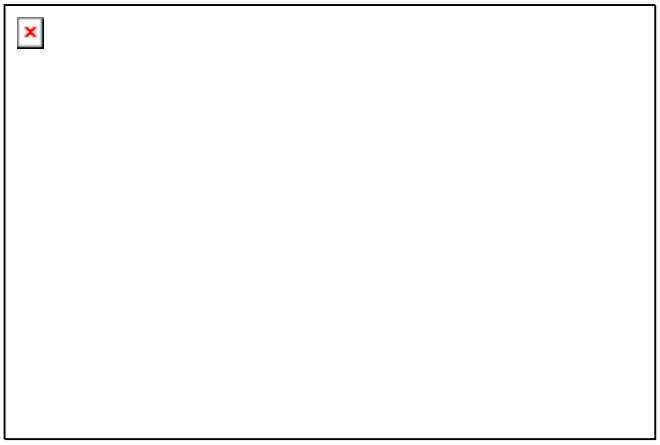


Spray contact cement on the front and sides. Note where the dead-pedal mounting holes are.

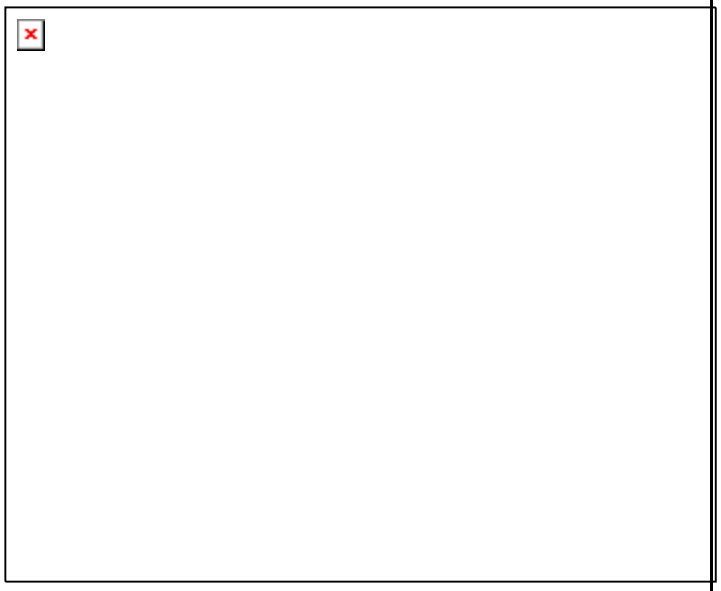


Glue in the front panel first. When gluing in #2, use the corner below the door hinge area and the front vertical edge for reference.



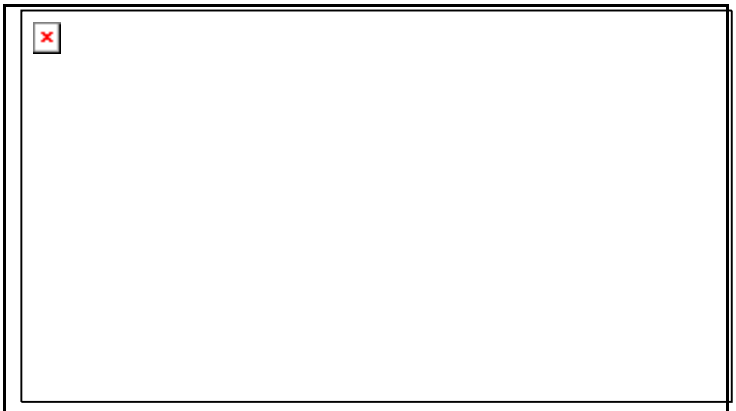


Layout of pieces.



Corner Detail

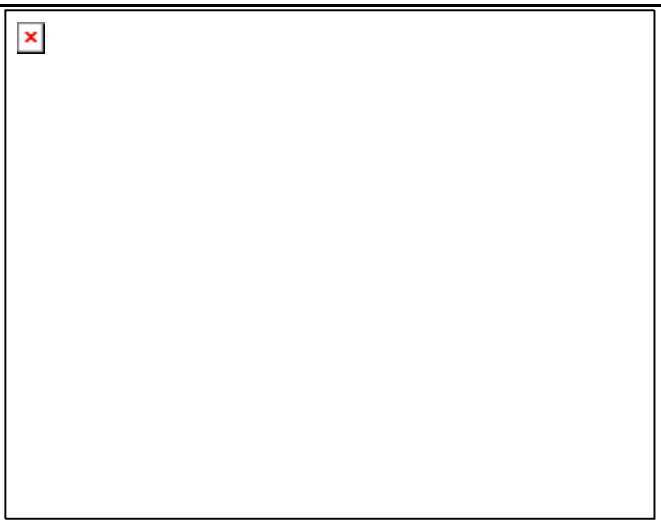
UNDER DOOR



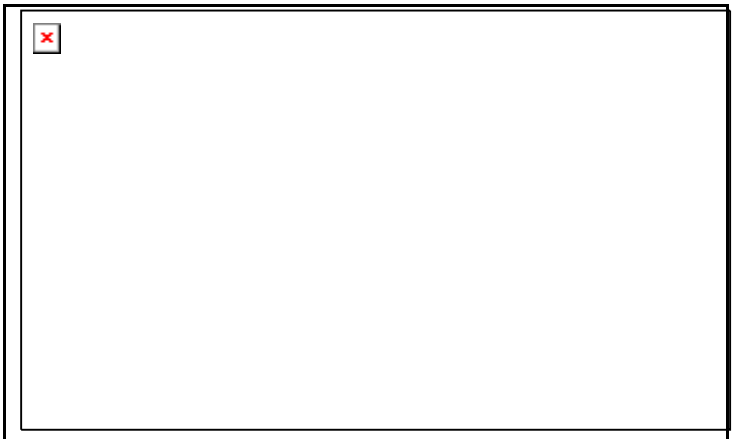
Before you glue in the rug, take note of the location of the seat belt hole at the rear bottom corner.

Remove the door strikers, mounting brackets and any shims. The kit is shipped with shims under the hinges to compensate for the rug thickness. When the doors are finally installed, don't use the shims.

Use the front and rear bound edges to line up the raw piece, wrapping the material around the front edge underneath the door hinge area. Trim the material even with the door sill opening and along the floor.

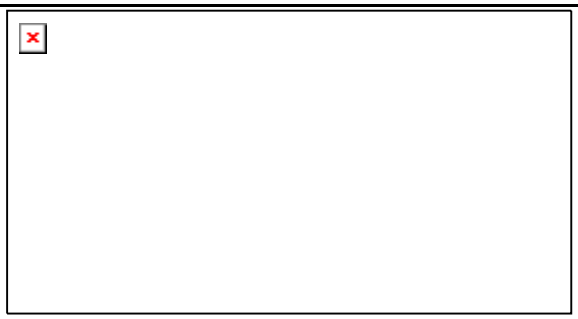


Details around the front hinge area.



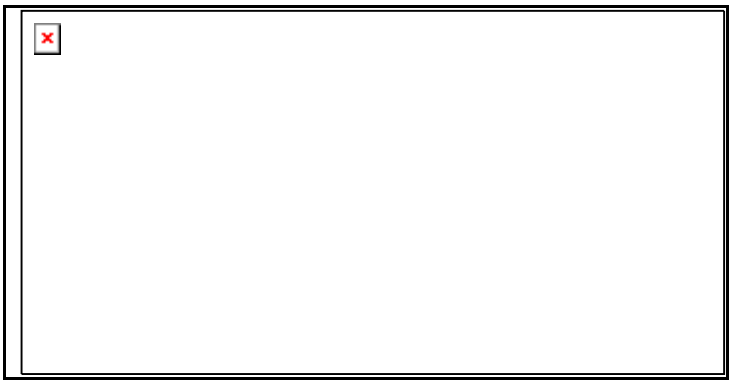
Trim around the top socket and locate the holes for the door striker mounting bracket.

TUNNEL



Locate the holes for the dash tube in the aluminum and trim the carpet back. Use the rubber grommets supplied to line the holes.

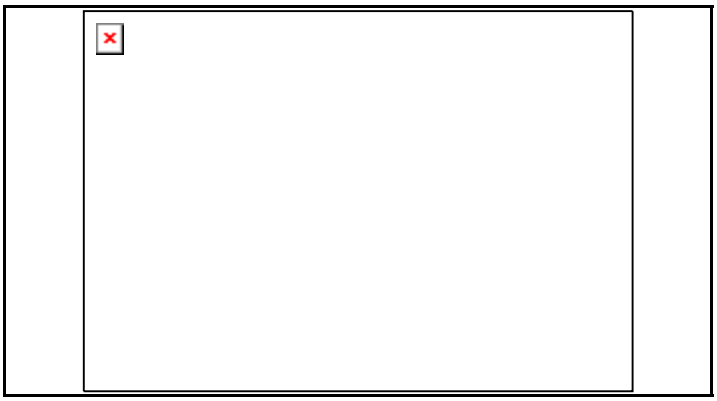
After locating where the carpet goes on the top, apply contact cement to the top of the tunnel and the carpet. Glue only the top section first. Apply contact cement to the right (passenger's side) of the aluminum (let it tack off) and carefully work the carpet down starting at the crease in front of the emergency brake handle cutout.



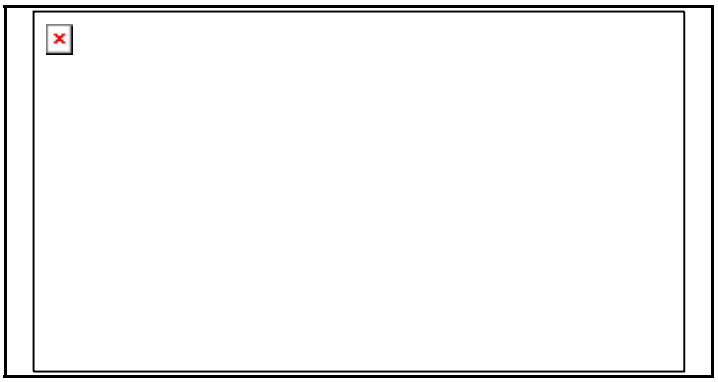
Do the same process on the driver's side.

Cut the hole for the shifter and install grommets for the tunnel tubes.

FRONT TOP PANEL



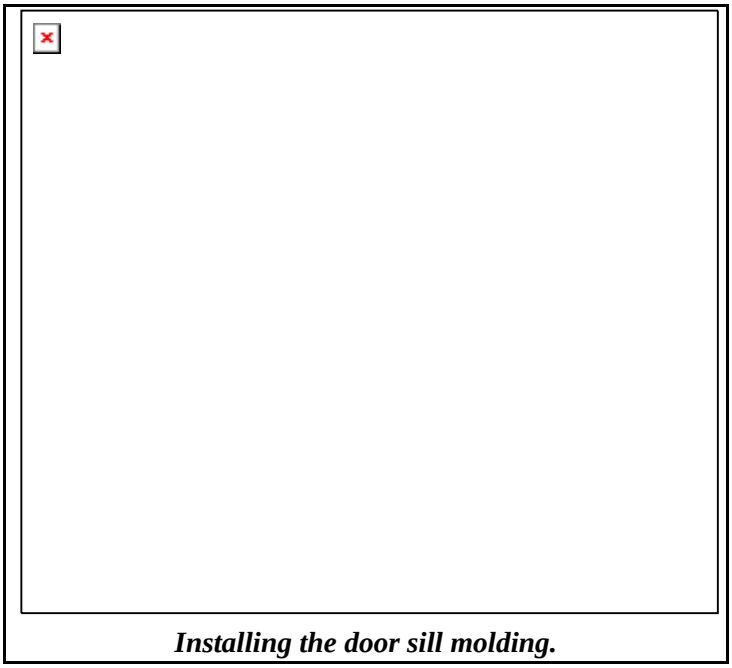
Install the aluminum between the footbox flanges. The carpet is secured with Velcro.



STEP MOLDING

Anodized aluminum doorstep moldings are supplied with the kit. They are pre-drilled but must be shaped to the door opening.

Note that the short lip side of the molding is to the inside of the door opening. Hand form the molding to the door profile. The top edge of the sill should extend about 2 ½" past the center of the latch.



Installing the door sill molding.

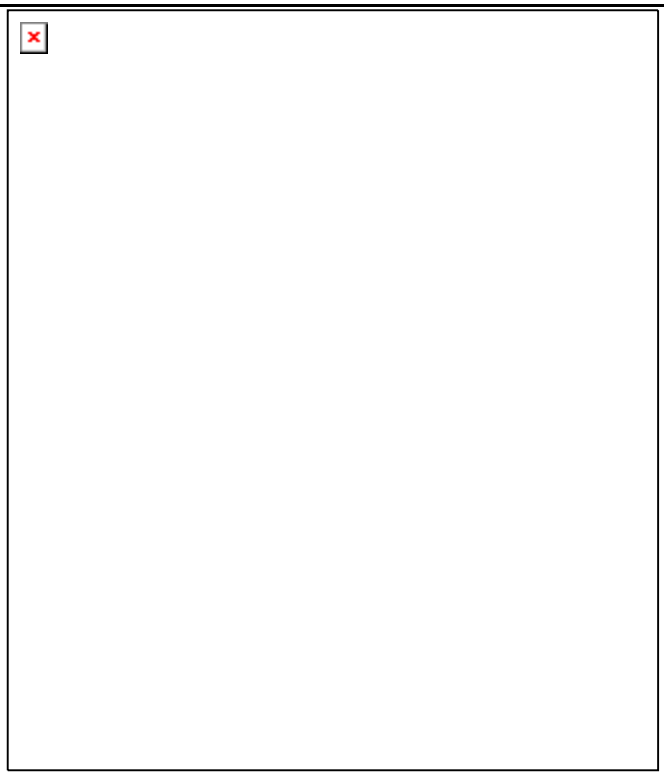
Apply masking tape to the door opening edge, marking the position of the rivets. To install, hand-form the molding, approximately matching its curve to the door opening. Once close, form it directly on the sill. Watch out for several rivets holding the sill flange to the body. Don't allow your holes to intersect with the rivets.

Drill a $^{3}/_{32}$" hole into the door opening flange through the top hole above the door latch striker.

Attach the molding at the top with one of the screws provided. Enlarge the hole slightly by running the drill in and out if the screw does not go in easily.

Press the molding tightly against the sill and carpet. Drill the next hole and insert the screw. Continue for the entire length of the molding.

FLOORS

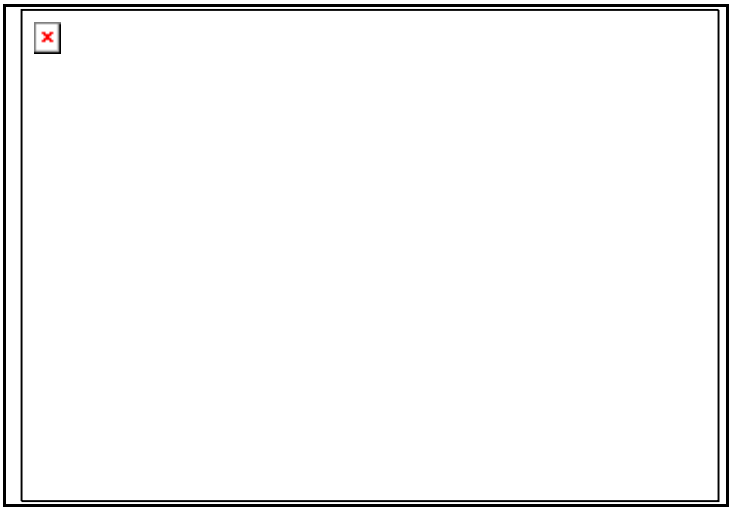


The under-seat pieces can be glued in or simply held in place with the seat mounting system.

The front pieces are held in place with snaps in the floor at the front and Velcro at the rear edge.

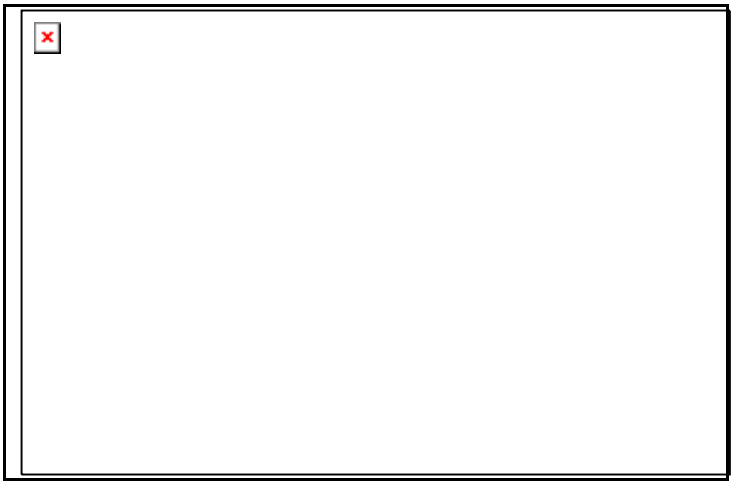
TRUNK

Note that the wire to the fuel tank (rear harness) must be installed before the trunk carpeting.



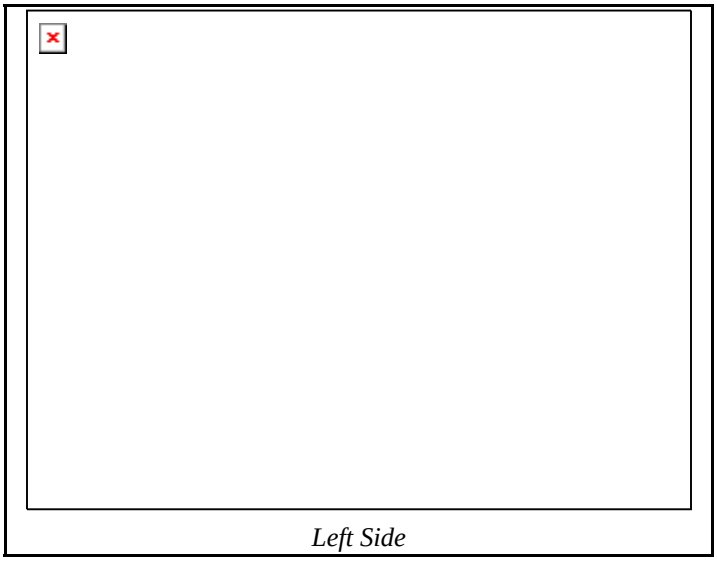
All the exposed carpet edges are cut and bound. Unless specifically noted, all pieces are **glued** into place.

Install the pieces in numerical order.



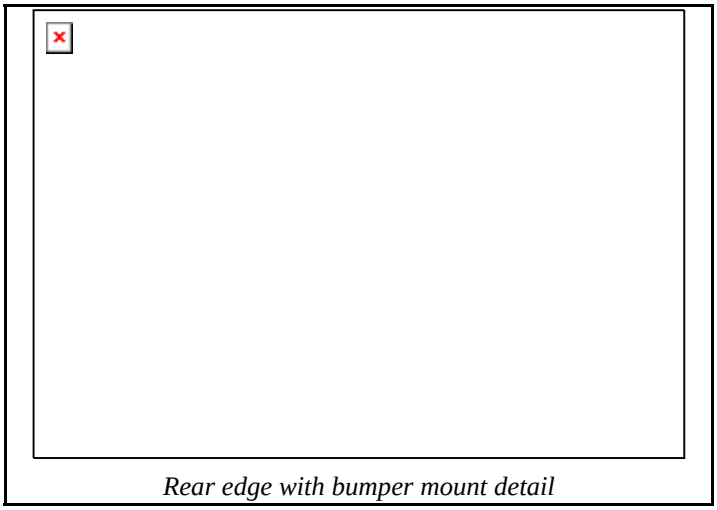
Right Side

You can use a scrap of material to hide the fuel filler pipe. Secure with a wire-tie.



Left Side

Trim the diagonal piece to fit around the roll bar brace mount.



Rear edge with bumper mount detail

A piece of fuzzy material ($^{1}/_{8}$" thick) is supplied with the optional trunk carpet to cover the inside of the trunk. Carefully trim the piece (leaving extra material around the edges) and glue the center part of this on with contact cement. Carefully push the excess material under the lip of the fiberglass inner panel.

- A $^{1}/_{16}$" thick piece of vinyl to line the glovebox, also installed with contact cement.

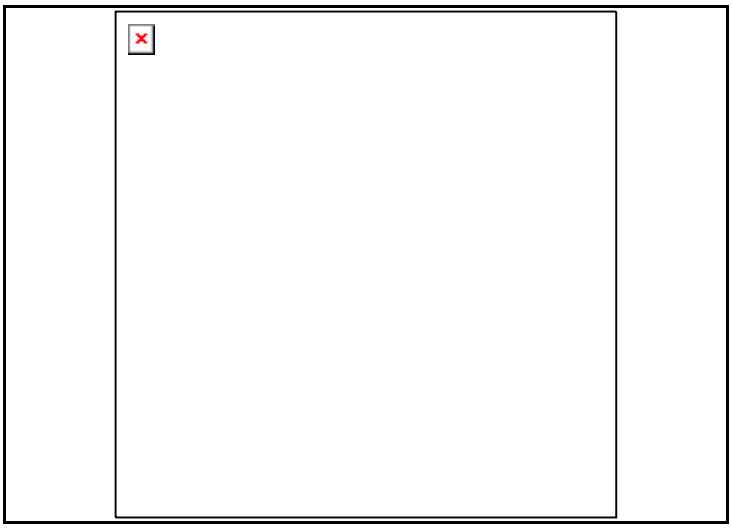
SPECIAL NOTES

The tunnel is upholstered before fastening to the floor. After gluing on the tunnel carpeting, cut holes for the dash tube grommets and install the grommets.

Glue in and cut the two seat belt mounting holes under sections **l-C** and **8-C**. See page 124 for hole locations.

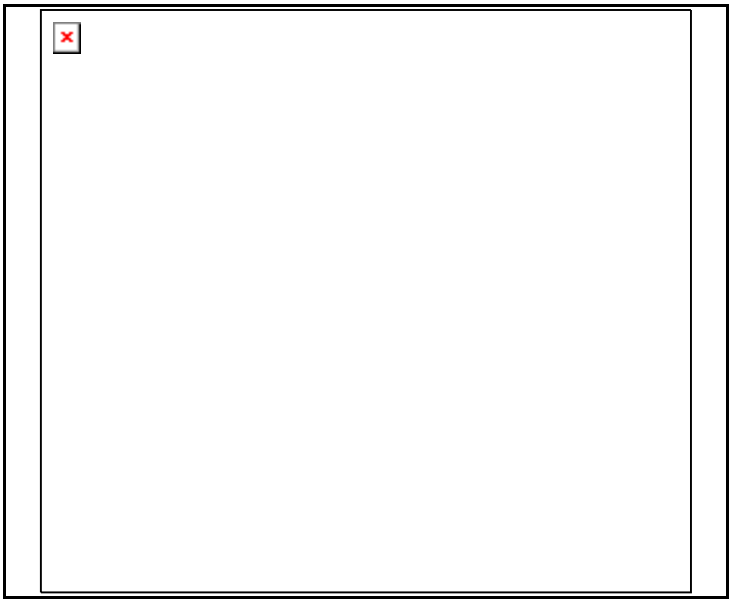
Use an awl to locate the mounting holes for the dead pedal. Cut small holes for the screws.

Locate the holes in the carpet for the lap and shoulder belts if necessary. See the rug diagram and page 124.



eint\doorrug1

Replace the door strikers as described on page 123. The added thickness of the carpet should make the rear edge of the door flush with the body. If not, add or subtract shims.



The door should latch on the second catch without being slammed. If it doesn't shut all the way with a solid "chunk", check for latch/striker misalignment or an interference fit between the two parts

To check for misalignment, hold the latch lever in the open position and shut the door without putting any pressure on it up or down. The door latch should seat into the striker without resistance or sharp contact sounds. Re-align vertically if necessary.

Open and shut the door several times, then check the striker receptacle of the latch for shiny spots. File these spots, being careful to hold the file flat. Recheck fit, and repeat the process if necessary.

Install the dead pedal over the carpet.

Attach the tunnel carpet (#17) with about 1" extending past the front edge, allowing the carpet to be folded over to the backside and glued. Cut out for the shifter, ashtray and hand brake lever. Screw the tunnel into place.

To make cleaning easier, the two-piece floor carpets are held in place with snaps and Velcro. Fit the carpets in place and mark the floor where the snaps are to go. Drill $^1/_8$" holes and screw the snap bases into place. Remove carpets to fit seats.

FRESH AIR CABLES

Lubricate the rubber grommet located midway up the front of the driver's footbox on the left hand side, with silicone spray or petroleum jelly.

Push the cable through the grommet and install the cable loop on the fresh air control valve as shown on page 63.

Attach the cable to the side of the footbox with a cable clamp.

*Also see the illustration on page **Error! Bookmark not defined.**.*

HAND BRAKE LEVER COVER

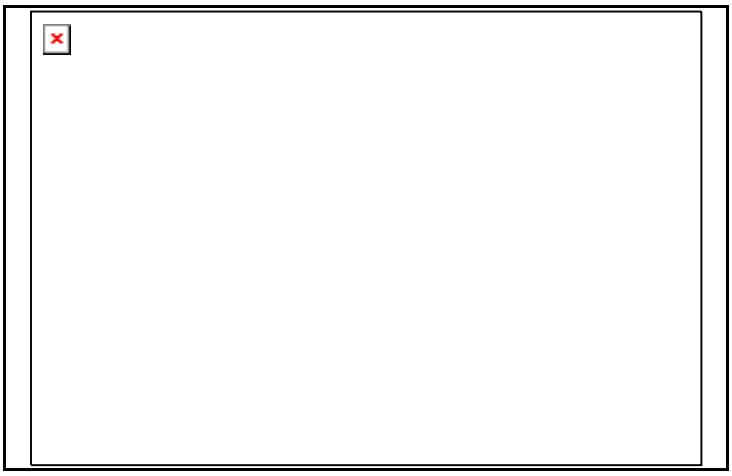
Using the figure below as a guide, open up the hand brake lever cover and align the cut-out section on the inside flap around the hole in the transmission tunnel behind the lever, bunching it up as necessary in the center. Attach the front edge of the boot by drilling holes through the fabric into the tunnel.

Hold the attaching plate against the cover and tunnel. Drill four $^1/_8$" holes into the tunnel. Attach the plate and cover to the tunnel.

eint\ebtrim1

Re-bolt the hand brake lever in place.

Fold the outer flap of the cover over the lever and attach to the inner flap with the Velcro and snap.



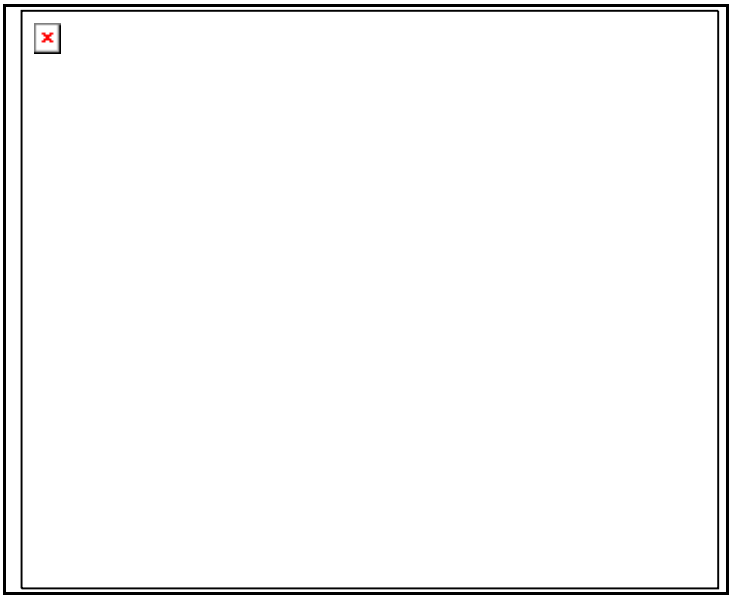
eint\ebtrim3

Release the lever to the full down position, fold and tuck in the rear edges of the cover as shown. Fit the cover up against the tunnel, drill through into the tunnel through the holes in the cover and attach with the trim screws.

When the floor carpet is installed, lay it on top of the cover material extending out onto the floor.

SEAT BELT/SHOULDER HARNESS

E.R.A. offers reproductions of the original competition belts. Inquire.



EINT\SEATBELT

Screw the seat belt anchors into the captive nuts provided on the lower chassis. If necessary, clean the threads with a $^{7}/_{16}$-20 tap to remove any coating build-up. If you have shoulder harnesses, cut holes in the carpet and, if necessary, chase those threads also.

Slip the ends of the belts in the clip to the eyelets of the anchors already in place.

SHOULDER HARNESSES

Locate the mounting holes in the chassis with an awl, and cut holes in the carpet. See page 83. The optional four-point shoulder harness are installed with the ($^{7}/_{16}$"-20) attaching bolts above the belt loops.

SEAT MOUNTING

Lay the floor carpets in place, and locate the seat mounting holes through the carpet. Mark and cut holes for the bolts in the carpet.

If you are not using seat adjusting rails, each seat must be raised up approximately ½"with spacers.

WITH ADJUSTING TRACKS

The lever for the seat tracks falls on the right side of both the driver's and passenger's seats.

The seats have captive nuts for the adjusting tracks in the seat bottom. Install the adjustment tracks, if used, to the seat base first with $^{1}/_{4}$-20 bolts. Make sure they don't stick up through the base and prevent the cushion from seating.

Put 2 $^{1}/_{8}$" shims (supplied with the seat tracks) under the right front holes over the tunnel. Put 3 $^{1}/_{8}$" shims under the left front holes. Place the seats so that the studs in the tracks go through the holes in the floor. Note that large washers are used under the floor on three studs and a small washer is used on the inside front.

If the seat does not slide freely, loosen all four bolts, slide the seat back and forth to align the tracks and re-tighten.

WITHOUT ADJUSTING TRACKS

If seat adjusting tracks are not used, follow the previous instructions, using the spacers and bolts provided to raise the seat base.

DOOR INSTALLATION

Generally, the hinge assembly won't have to be disassembled. If the bushings have to be renewed, (with the hinge off the car) loosen the retaining set screws and drive out the pin. The bushing number is listed on page 148. Lubricate with light grease on assembly.

Bolt the **door hinges** onto the chassis with the **side closing plates** and original **shims** that go behind them. The plates seal off the cowl area from the engine compartment and have weather-stripping glued to their outer edges to seal against the body. See page 83. Don't tighten the hinge bolts.

Bolt the door to the hinge, lightly snugging the bolts. If the car is already painted, consider using masking tape along the door and body edges to prevent damage when assembling.

The door edge may be aligned with the body opening by loosening the bolts where the hinge attaches to the door.

To adjust the front edge surface of the door relative to the body, loosen the hinge where it attaches to the chassis. Once the door is properly located, tighten the hinge bolts.

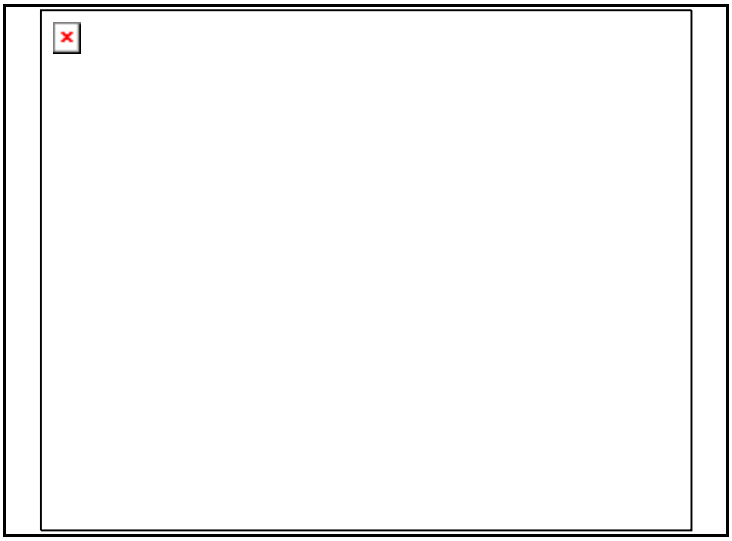
\ebod\drlatch

Bolt the **latch striker** to its mounting plate and install the assembly loosely to the chassis. Remember to replace any shims found earlier. Close and latch the door while allowing the striker to self-align with the latch on the door.

Tighten the striker bolts. Don't worry about the door fitting flush at the rear. The latch striker must be refit when the rugs are installed.

SEAT BELT/SHOULDER HARNESS

E.R.A. offers reproductions of the original competition belts. Inquire.



EINT\SEATBELT

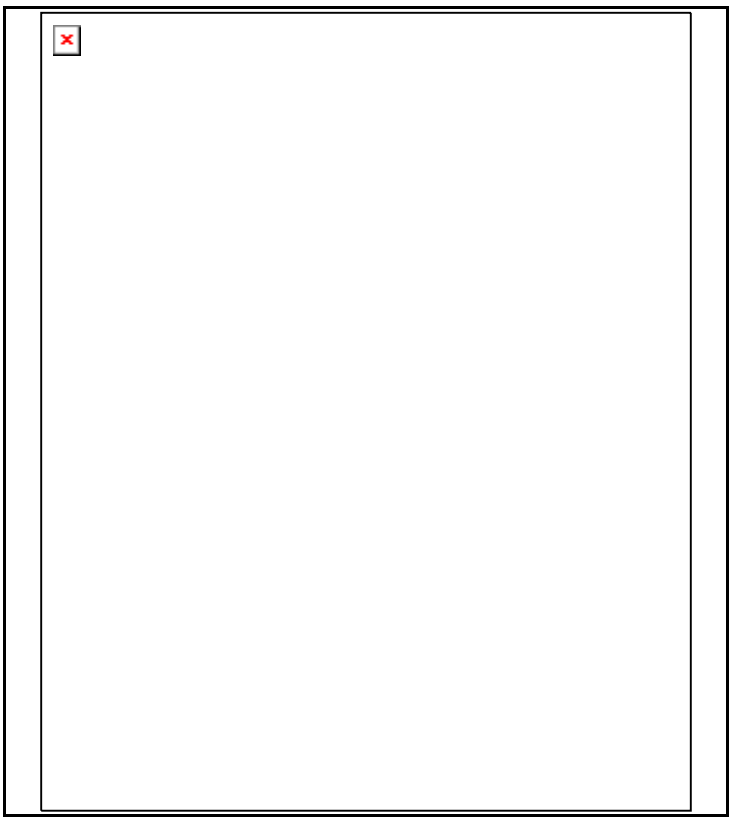
Slip the ends of the belts in the clip to the eyelets of the anchors already in place.

SHOULDER HARNESSES

Locate the mounting holes in the chassis with an awl, and cut holes in the carpet. See page 83. The optional four-point shoulder harness are installed with the ($^{7}/_{16}$"-20) attaching bolts above the belt loops.

BUMPERS, JACK-PADS

The bumpers or jackpads are factory fit and installed. The aluminum spacer sleeves can be easily **polished** with very fine steel wool and/or car polish.



Ebod\bumpers

INSTALLATION

The lower spacer nut is accessed through a plug in the inner splash panel. The upper nut is access from the inside of the nose opening.

Fit the rubber grommets to the body. Be sure the lip is seated on both side of the fiberglass.

Fit the studs and spacers onto the **bumper uprights or jackpads**. Note that the upper spacers and studs are **longer** than the lower ones on both front and rear of the car. Leave the nuts loose if the nudge bars (hoops) are to be fitted.

Insert the bumper/jackpad assembly through the body grommets and secure onto the frame/bracket with a lock washer and nut.

If you have the rear **nudge bar**, the bar and uprights must be installed as a unit.

The **front** nudge bar can be fitted separately or in unit with the uprights.

Align and tighten nuts and bolts.

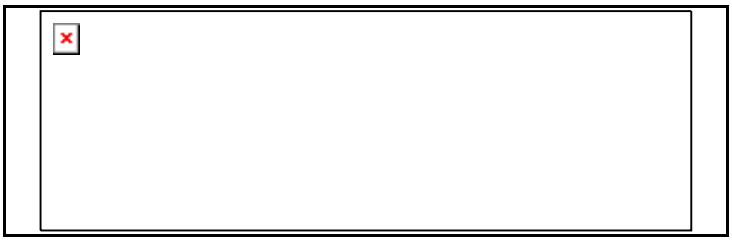
RETROFITTING THE FRONT NUDGE BAR

Tape the sides of the front uprights to prevent scratching and facilitate marking.

With the front uprights installed as shown above, hold the nudge bar between them, aligned with the body opening and with about 3/4" clearance between it and the body.

Transfer the hole locations from the nudge bar to the uprights.

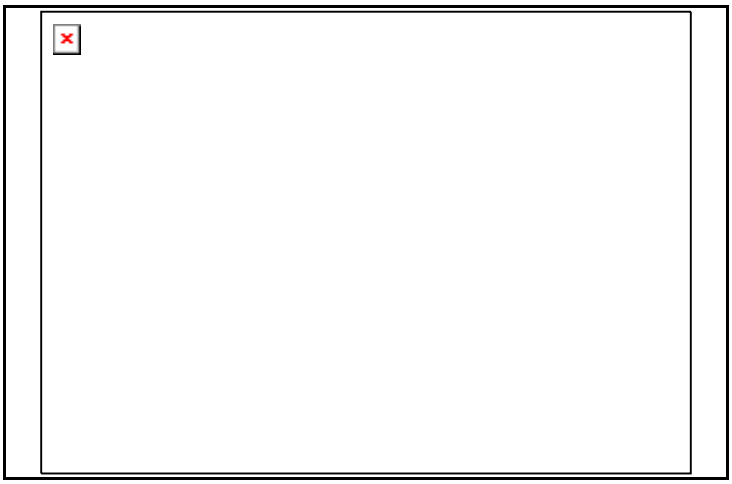
Drill 3/8" holes in the uprights and install the threaded inserts with a special tool or a nut and bolt.



ebod\rivnut

HINGE COVERS

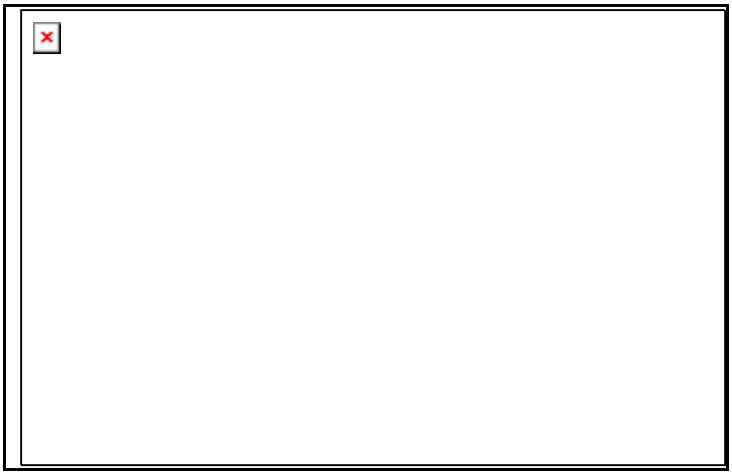
The fiberglass covers are different from left to right. Don't over-tighten the screws.



eint\HINGCVR

FRESH AIR INLET DUCTS

The left and right ducts will only fit one way. Use the diagram below as a guide.



ebod\fduct

If you wish, paint the inlet screens.

Slip the inlet ducts over the body flanges and secure each with 4 Phillips screws from the air-intake side.

Secure each hose to the splash panel with clamps as shown. The rear clamps have speed nuts and are fastened from inside the engine compartment.

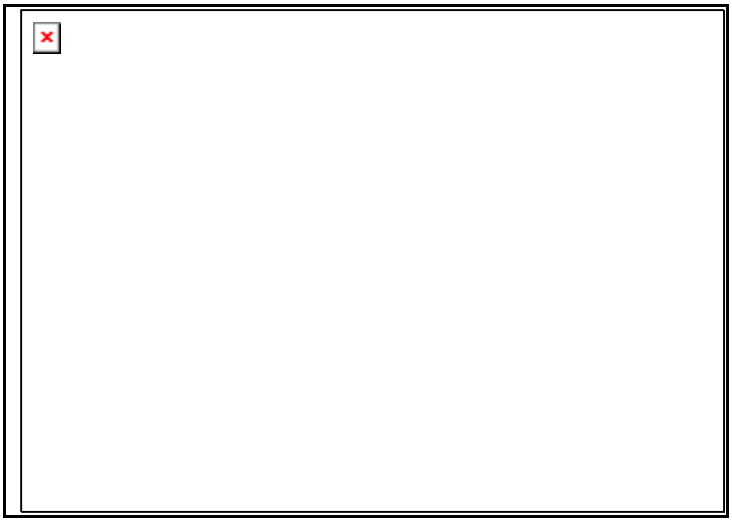
FUEL FILLER CAP

See the notes on disassembly, page 58. **Lubricate**!

LIGHTS

HEADLIGHTS

All holes for mounting the lights are pre-drilled at the factory. The headlights can only be installed with the correct orientation.

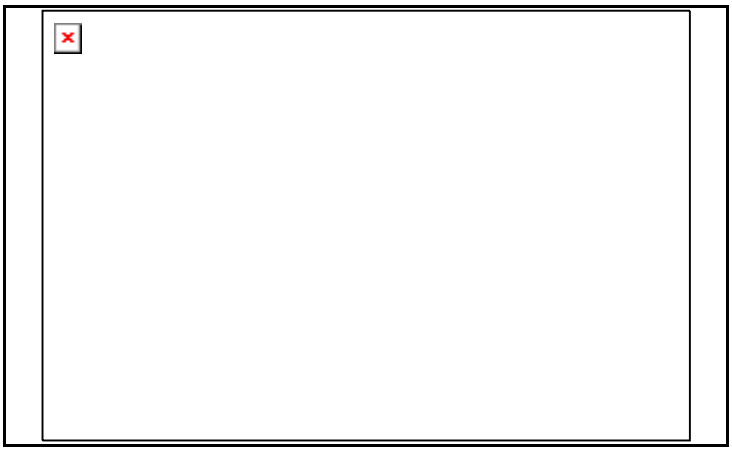


e\flights1

Mount the headlight assembly and gasket with four #10 Phillips pan head tapping screws.

Pass the headlight wires (with the parking light wires) through the rubber grommet in the inner panel and rearward to the top of the spring perches. Connect to the wiring harness and ground as shown in the separate wiring instructions. Leave the rims off till the headlights are adjusted.

SIGNAL LIGHTS

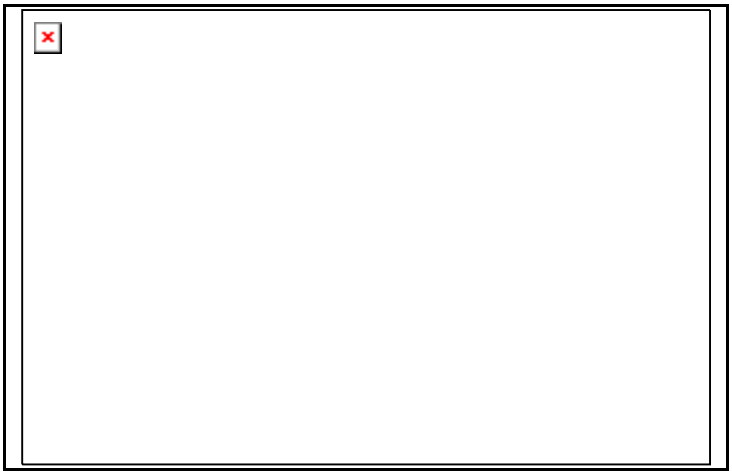


e\fparkwir

Install the harness as shown above, securing it with the clamps on the inner panel.

Two styles of front signal/parking lights are used on the E.R.A. 427SC. Both are valid duplicates of the original Cobra:

- **SC style** (used on original race cars) Uses a twist-off lens. Used with the rectangular taillight, duplicating early (65-66) original 427 Cobras.
- **Street style** (used on the last $^{2}/_{3}$ of the production run): The lens is held on with two screws. Usually used in conjunction with later (66-67) original round taillights.



e\flights2

When making the wiring connections and inserting the bulb, use a light electrical grease to prevent corrosion from water and road salts.

Mount with the supplied #10 stainless nuts and bolts. The lights have male and female terminals which mate with the harness only one way. Connect the black (ground) wire (with the eye terminal) to one of the light mounting bolts.

*On some **twist-off lights**, it is possible to insert the bulb two ways. If the signal light is dimmer than the parking light, remove the bulb, turn it 180° and reinsert it*

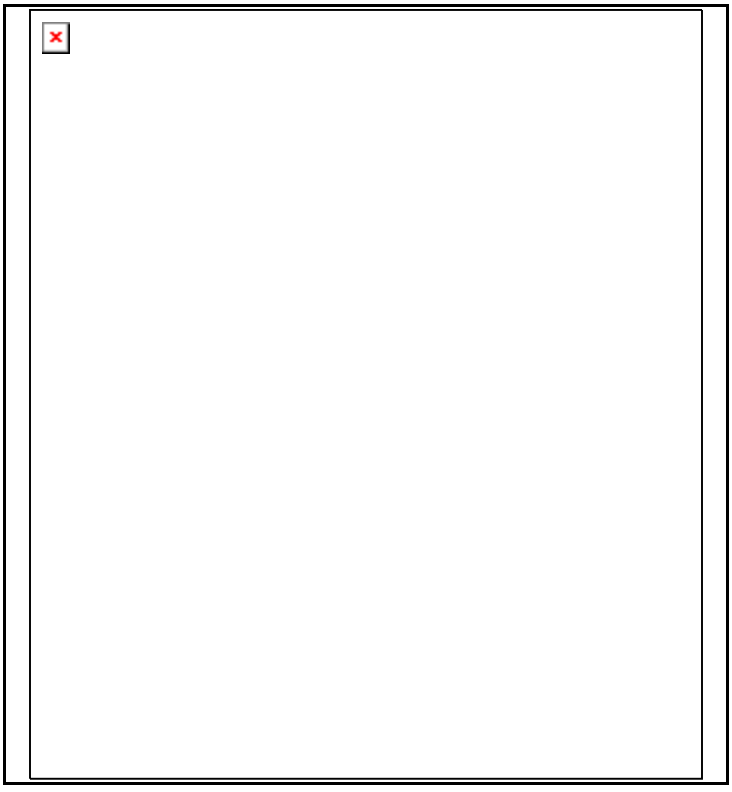
TAIL-LIGHTS

Two types of original style lights are possible:

- **Rectangular** lights were used on the competition cars and some early street cars.
- **Round** lights similar to the screw type lens front signal/park lights were used on the later street cars.

The **rectangular** lights are mounted with the lettering on the lens right side up, and the **round** lights with the notch to the bottom.

Taillights with round or rectangular lenses may have pigtails with female connectors. Otherwise connections are made directly to the light.



e\tailites

To make the tail light connections:

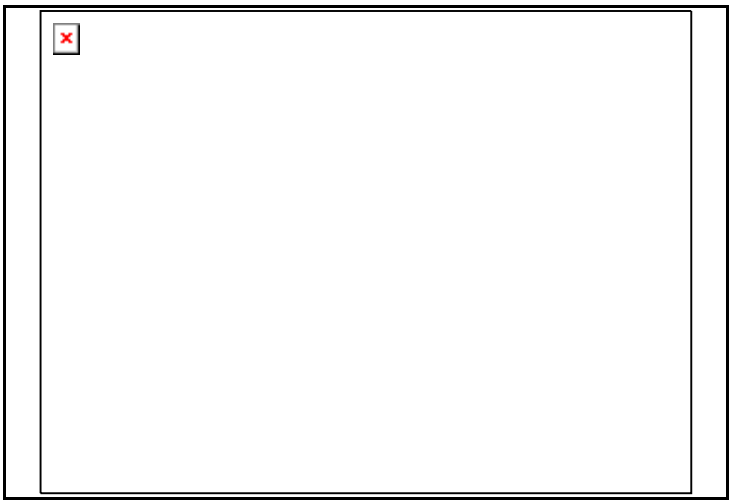
- Make sure that the rear harness black ground wire is connected to the light stud or ground receptacle.

- With the parking lights on, the red wire should be live. Touch the red wire to each pigtail (or connector loop). Connect that wire to the dimmest filament.
- Connect the other wire to the remaining receptacle.

BULB PROTECTOR/REFLECTOR

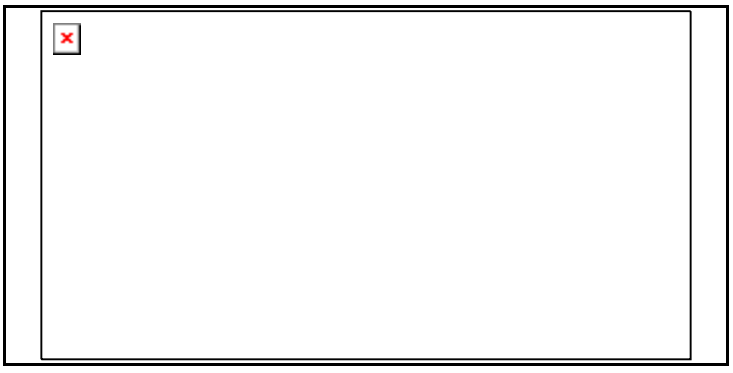
(Optional)

ERA offers optional reflectors for the rectangular tail-lights. Be careful not to pinch the wires when the reflector is installed. Install after the light is installed by using a second set of nuts and washers.



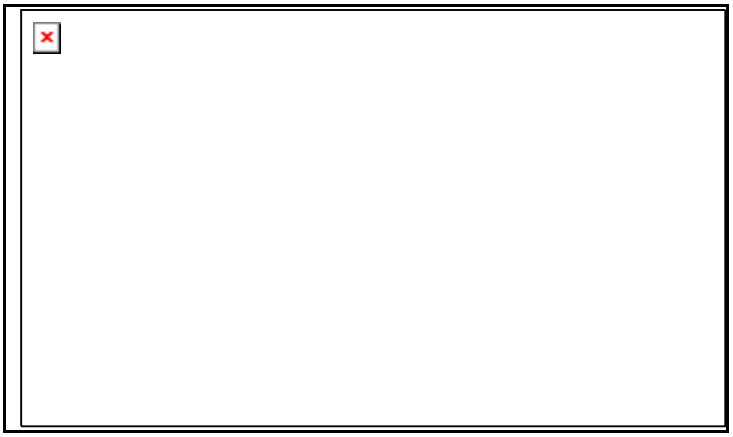
REAR REFLECTOR (BOTTOM)

(Used only with round taillights) Mount with the notch to the bottom. Some reflectors will have mounting studs, the others require a sheet-metal screw.



ebod\Reflectr

LICENSE PLATE LIGHT



ebod\liclite

INSTALLATION

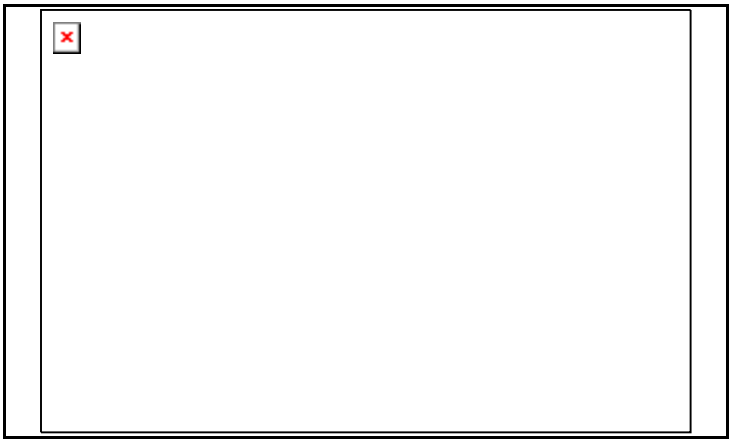
Remove the attachment screw, lens and cover.

Insert the wires through the larger of the 3 holes in the deck lid, license plate bracket (optional) and the back of the light gasket.

Connect the black wire to the case and the red wire to the loop on the bulb holder.

Attach the light and bracket to the deck lid and refit the lens and cover.

BACK-UP LIGHT (OPTIONAL)



ebod\bulite

Back-up lights may be required in some states. The type and location of the light is the customer's choice, but we recommend mounting the light on a bumper bracket or the nudge bar. Partial back-up light wiring is built into the harness. The wires for the back-up light switch connections exit the main harness on the passenger compartment side of the firewall.

MIRRORS

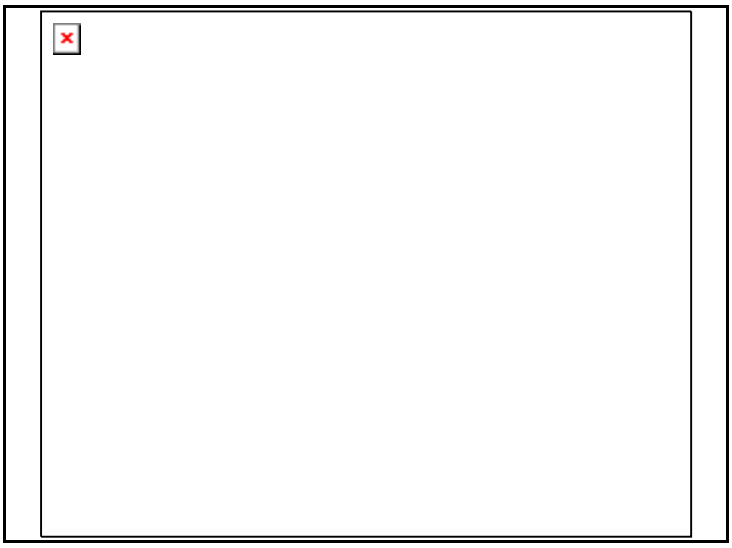
SIDE

INSTALLATION

Follow the instructions included with the mirrors for disassembly. You *may* have to drill the holes in the base larger to fit the included screws.

Have a friend help you locate the mirror on the fender. Use wide masking tape to protect the fender where the mirror is to be mounted.

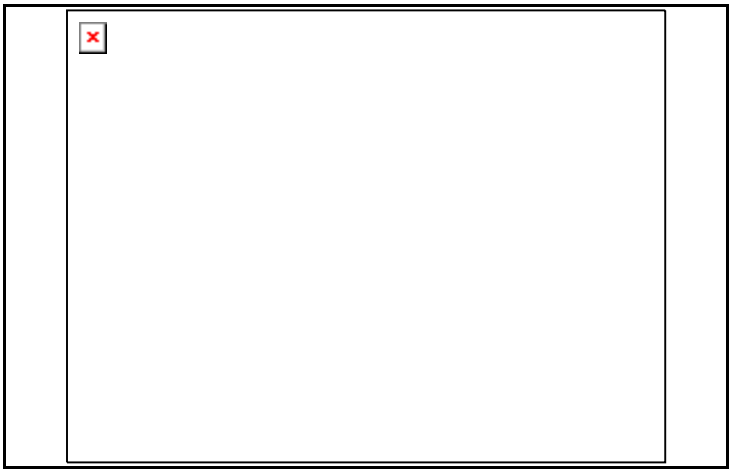
Use the plastic gasket to mark the outline of the gasket and the mounting holes onto the tape. Make sure the gasket is facing in the right direction.



ebod\outmir1

Position mirror pedestal on the fender over the hole markings and within the gasket outline.

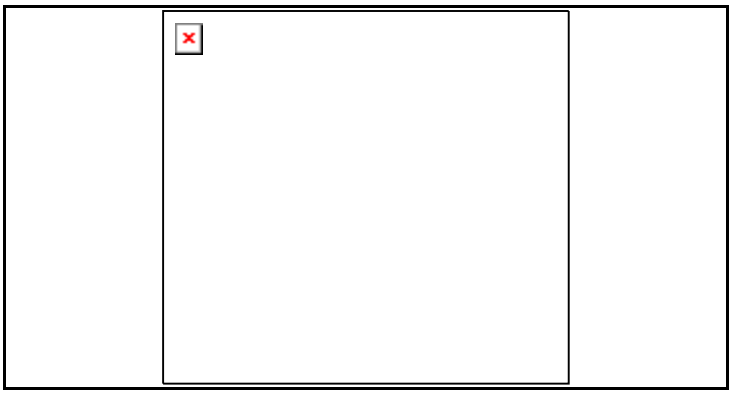
Holding the pedestal in position, drill two $^{1}/_{8}$" holes where marked, making sure to hold the drill at the proper angle. Be very careful when putting in the screws. If they are too tight in the hole, "adjust" the hole size with the drill.



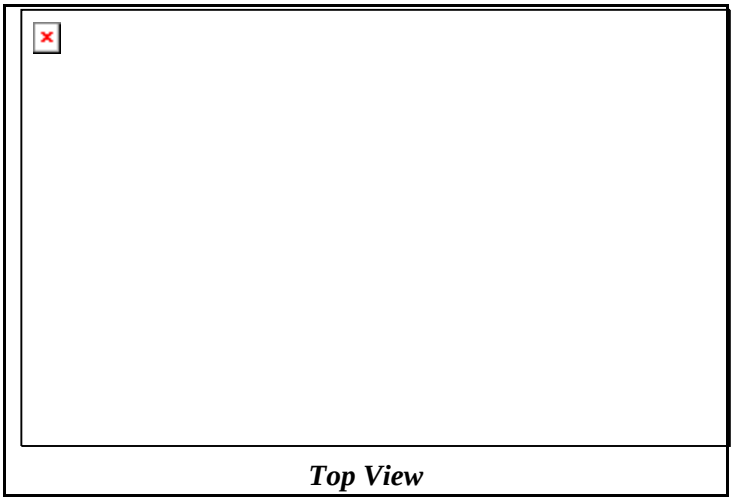
ebod\sidemir

DASH

Assemble the mirror as shown. The upper and lower clamps hold the rim against the reflector. Note that the stainless steel reflector is only polished on one side.



Mount the rearview mirror on top of the dash in the pre-drilled holes using chrome #8 oval head Phillips tapping screws.



Top View

TOP SNAPS

The top snaps were trial fit before paint. If the screw holes have **paint** in them they should be **chased** with a $^{9}/_{64}$" drill bit. If the stud goes in with some difficulty, use a similar sheet-metal screw to “chase” the threads in the fiberglass.

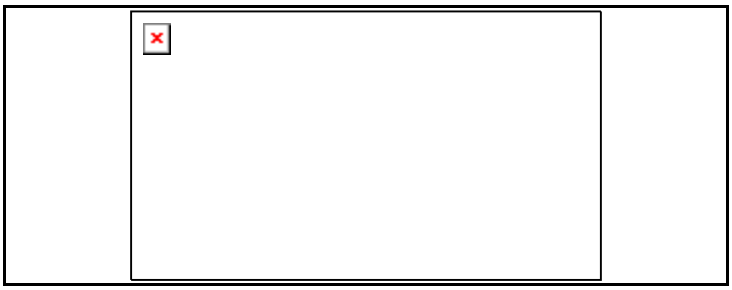
Use a fiber or plastic washer under each snap. Do not over-torque! The studs are plated brass and break easily.

EMBLEMS

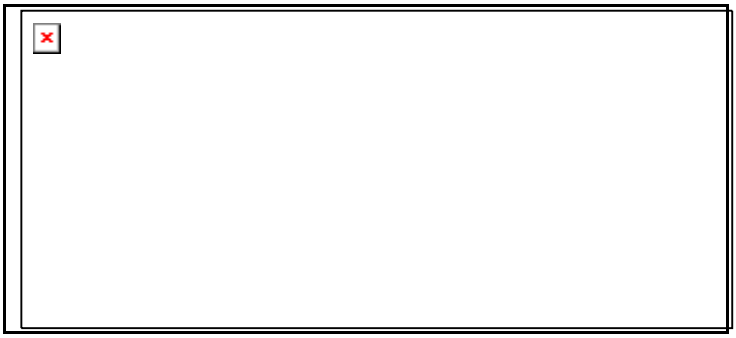
NOSE

Lay out a centerline by projecting the line of the hood forward and measuring across the headlights. Use masking tape to protect the paint during marking and drilling of the hole locations.

Follow the dimensions in the diagram below for the location of the original type "Cobra" emblems. Drill $^{1}/_{8}$" holes for the emblem studs. Access holes are already in the inner panel.



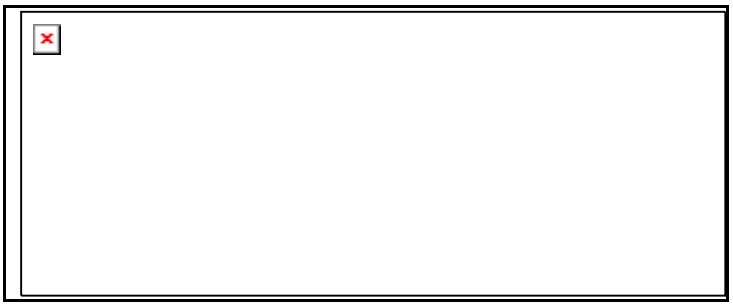
Secure the emblem with the press-on speed-nuts provided.



g\emblem1

TRUNK

Follow the same procedure as the nose emblem installation.



g\emblem2

SIDE

Project directly up 1 5/8" from the 4th louver and measure forward 1/2" for the rear hole

g\emblem3

*The **steering wheel center cap** (see page 113) is installed after final suspension alignment.*

LICENSE PLATE(S)

FRONT

E.R.A. Plate offers a tilting bracket to mount the front plate on the optional front grill surround.

REAR

The rear plate may be mounted directly to the trunk lid using 3/8" (minimum) plastic spacers between the plate and the body. Alternately, E.R.A. offers a plain bracket that bolts underneath the license light and a special *Carroll Shelby Motors* frame. See the illustration on page 127.

SIDE PIPES

For the under-car system see page 132.

The E.R.A. 427SC was originally designed using an original set of Cobra 427 side pipes. When we lengthened the drivers-side footbox, we had to change the primary pipes to fit. Exhaust systems are available from E.R.A. or the suppliers listed on page 27.

The outside pipes are available in bare steel or stainless alloy. **After the brackets are welded on**, the bare steel can be painted with a VHT type coating (usually must be re-done every year), ceramic (HPC, Jet-Hot, Airborn Coatings, etc.) or chrome plated. Stainless pipes will discolor slightly to light gold. Chrome plating will turn blue only on the hottest sections of pipe.

We recommend that the primary pipes be **ceramic coated**. This decreases the heat radiated in the engine compartment and extends the life of the pipes. Because of the slip fit into the side pipes, mask the last 1 1/2" of the outside surface before coating.

While ERA specifies extra heavy **flanges,** the primary pipes may have distorted during welding. Use a flat surface to check their condition. If there is more than .020" variance from flat, grind, file or mill the surfaces.

***Note**! Ford numbers the cylinders on the FE engine 1-4 on the right (passenger's side) bank, 5-8 on the left side).*

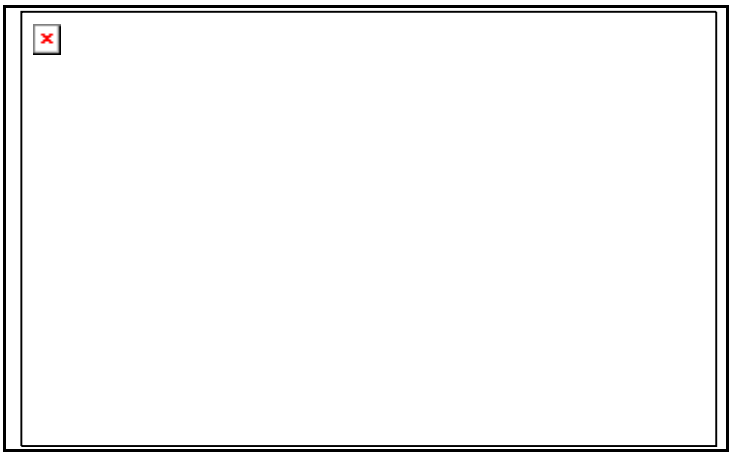
The E.R.A. supplied primary pipes may differ from standard Ford practice and be numbered (from the front) 1-4 on the left bank, 5-8 on the right.

The 4 longer primary pipes are for the left side.

E.R.A. can optionally weld the brackets onto the side and primary pipes at the factory.

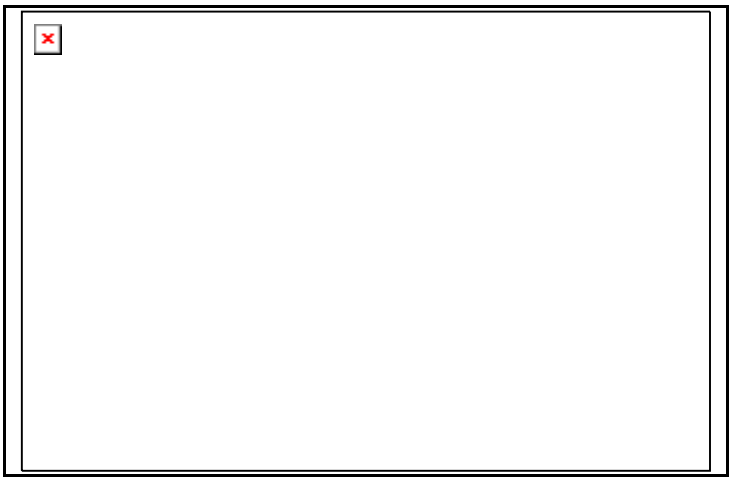
WELDING THE SUPPORT BRACKETS

Install the primary pipes on the engine, leaving the bolts slightly loose.

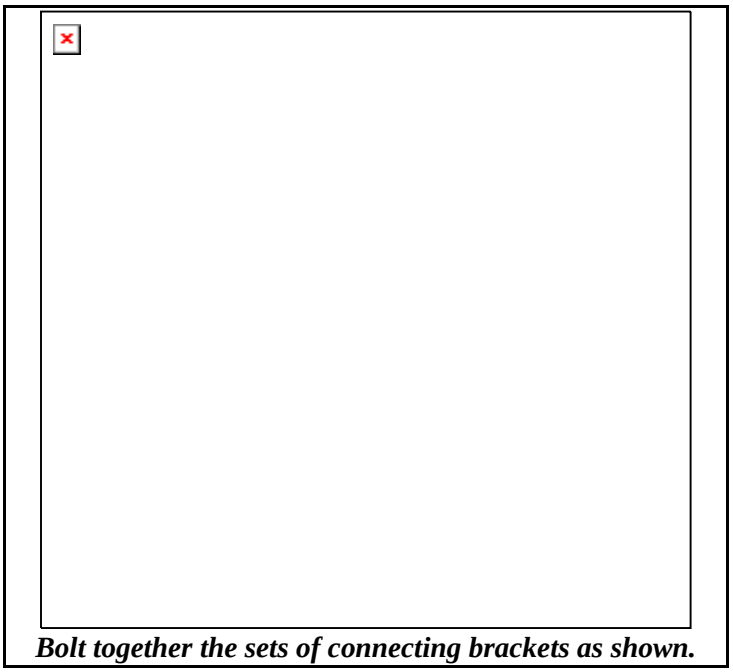


ebod\primpipe

Support the pipes as shown, parallel with the bottom edge of the rocker. Leave about 1 $^{1}/_{2}$-2" between each side pipe and the rocker panel. A soft-faced dead-blow hammer helps get the pipes all the way on.



ebod\spipesup



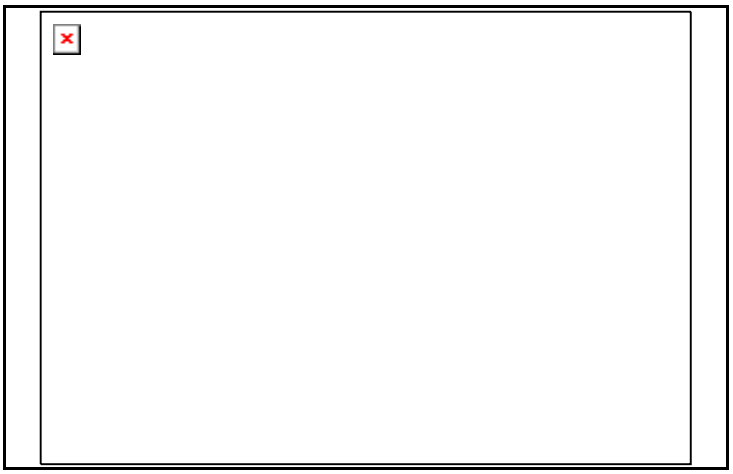
Bolt together the sets of connecting brackets as shown.

ebod\spipebk1

Position the brackets in place, one end of each set on a primary pipe, the other end on a side pipe. Position each set of brackets on pipes diagonally opposite each other so that they are easily reached.

Tack weld each set of brackets in place. Complete the welding when the pipes are removed from the car.

REAR HANGER BRACKET



ebod\spipebrk

Bolt the rubber hanger to the chassis and the end of the bracket. Mounting holes are provided on the angle support welded between the main chassis rail and the outer side rail.

Fit the brackets in position against the side pipes and tack weld in place.

Unbolt the front brackets and rear hangers and remove the side pipes and primary pipes. Weld the tacked brackets in place.

Coat the pipes as desired.

FINAL INSTALLATION HINTS

Use gaskets coated with high temperature silicone (such as Permatex Ultra Copper 81878) on both sides. Special exhaust-tolerant silicone is available at most automotive supply stores. Loosely bolt the primary pipes to the engine.

Spread a small amount of silicone or Walker Acousti-seal on the inside of the collector pipes and install the side pipes over the primaries.

With the rear of the side pipes propped up, slip the end of the side pipe through the body. Hold the side pipes up against the ends of the primaries and start the primaries into the side pipes one by one. Once all are inserted, push all the way on. A rubber hammer sometimes helps to get the pipes fully seated.

***Stainless steel** side pipes may benefit from Walker Acoustic-seal exhaust sealant between the primary pipes and the side pipes.*

Loosely bolt the front brackets together and the rear brackets to the rubber hanger.

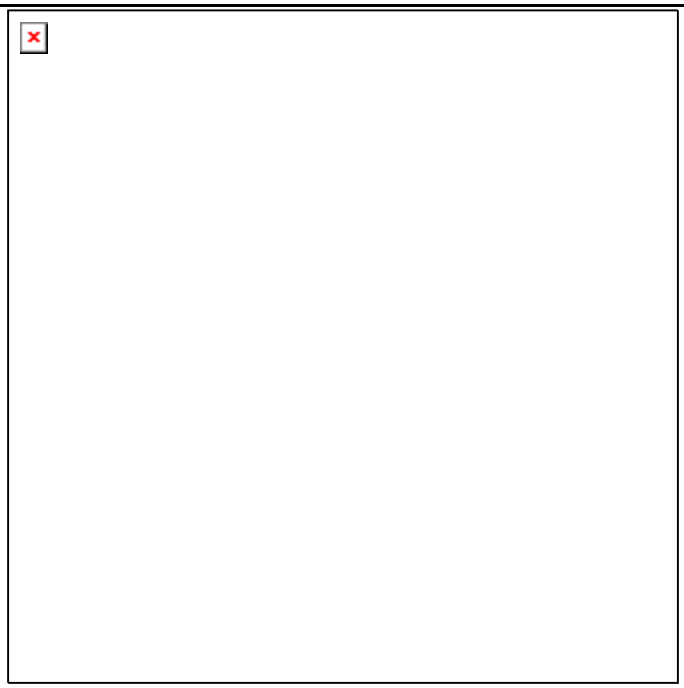
Tighten the bolts holding the primary pipes to the cylinder heads. A modified wrench (see special tools on page 28) will make tightening the rear drivers side flange much easier. **Re-torque** the bolts after the engine is run and periodically thereafter.

EXHAUST SYSTEM, UNDER-CAR

For side pipe installation, see page 130.

INSTALLATION

Install **insulation** on the underside of both the floors to minimize heat transfer into the passenger compartment:



See page 131 for instructions on welding the tabs between the collector and privary pipes.

d\undercarex

- Glue or rivet $^{1}/_{8}$" aluminum or stainless faced insulation onto the bottom of the floors. Alternately, you may wrap the exhaust pipes and mufflers.
- Add jute or foam insulation underneath the rugs.

Install both sets of primary pipes as described in the side-pipe section. The flange bolts on #8 cylinder may require the special wrench shown on page 28. Also see the “Final Installation Hints” for the side pipes.

Fit the collector pipe onto the primary pipes.

The exhaust hanger mounting holes are on the floor transverse supports: One in the front support, two in the rear.

Mount the muffler with the inlet offset to the outside.

Install the intermediate and tail pipe

Position the entire system to leave clearance between it and the frame. Tighten all bolts and clamps.

CONVERTIBLE TOP

FITTING THE TOP KIT

More pictures at
www.erareplicas.com/427man/top/index.htm

While it is possible for an individual to fit the top, E.R.A. recommends that you have the top fit by a professional upholsterer, especially if you have a roll bar. The following general guidelines will be of some help. ERA takes no responsibility for any damage resulting from installation of the top by any party

*If you intend to install side curtains in the future, E.R.A. can supply a **template** to duplicate the correct windshield angle, or use an angle gage to set the **glass angle at the center of the windshield** to 44 degrees above horizontal – assuming the car is level of course.*

To prevent **scratches** in the paint, tape heavy paper over the area of the rear body snap studs. Punch holes so the studs protrude through the paper.

If you have side curtains, match the angle of the windshield to their front edge. See the ***Side curtain*** section below.

Install the front channels onto the windshield frame. The inside portion of each front channel has a stud that fits into the slot of the frame. See below. Press down to engage, slide to the outside and down in the windshield frame. Check that the stud is secure in the windshield frame.

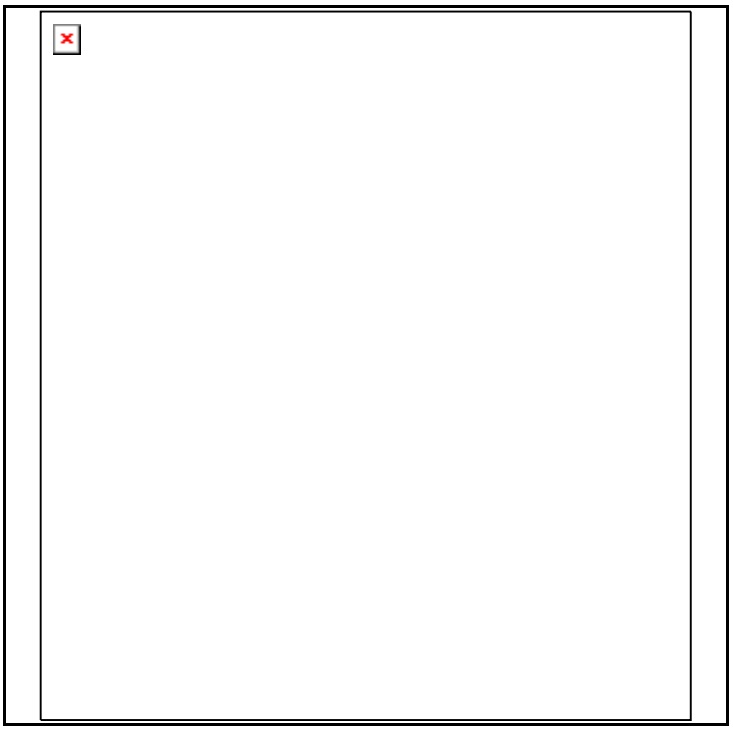
Secure the stationary brackets to the windshield side posts with the screws provided - Locktite® recommended on the screw threads.

Assemble the rear bow halves together. Turn the knurled adjusters all the way into the ends of the bows.

Install a ferrule in each of the receptacles adjacent to the body just outside the seat-backs. Slide the bow assembly into the sockets with the hinged brace toward the rear.

*Do not try to fit a **cold** top! Always work at room temperature or above.*

See illustrations that follow.



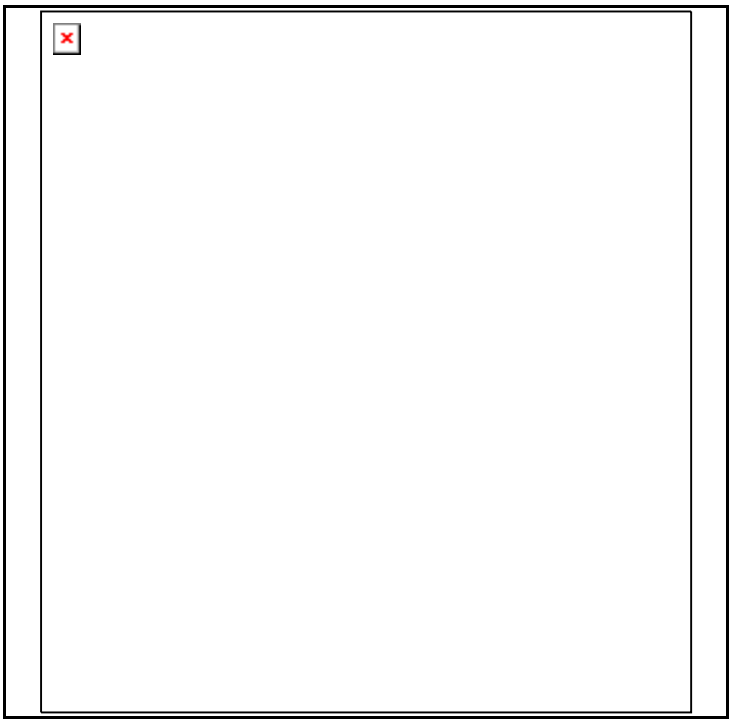
E\topfit1

Install a **snap** on each rear flap as close as possible to the outside corner:

- Punch a center hole in the fabric. Use the snap backing plate as a guide to make 4 small slits in the fabric with a sharp knife.
- From the outside, insert the prongs through the small slits. Install the snap backing plate to the underside of the material, bending the prongs to secure the snap.

Lay the top in place over the rear bow and secure the snaps to the studs in the body closest to each rear door opening. If the top is too tight for the snaps to reach the studs even at the lowest height adjustment, remove some material in the where the main bows come together to create some slack.

If the frame doesn't follow the contour of the fabric, it can be "tweaked" to fit by hand/over-the-knee bending.



e\topfit2

Starting on the passenger side of the car, install the balance of the snaps in the center of the flap, alternating from each side towards the center.

If the car has a roll bar, carefully make a slit from the bottom edge of the top to about 1" into the plastic window. A small boot can be made from two pieces of fabric sewn together, sandwiching the top material between them.

Glue felt pads to the underside of all snaps to prevent paint damage..

Use 2" masking tape to tape each front channel down to the top of the windshield securely at the outer edges. Pull the top fabric over the top of the channels, beginning at the center and working over to each side, taping the material to the windshield glass as you work.

Alternately adjust the top over the rear bows and pull and re-tape the top material at the front to remove slack from the top and minimize wrinkling. Do not pull hard at any time. Stress can break the windshield! Make sure the top material is centered on the front bows and windshield. Keep adjusting the fabric at the rear and front of car until the top is smooth and sag free.

Beginning at the center, carefully un-tape a portion of the top fabric from the windshield. Glue a portion of the top fabric to the front vertical face of the channel with contact cement. **Do not** apply the glue to the top of the front bow, only to the front surface. Work from the center to the sides until the entire top surface is glued.

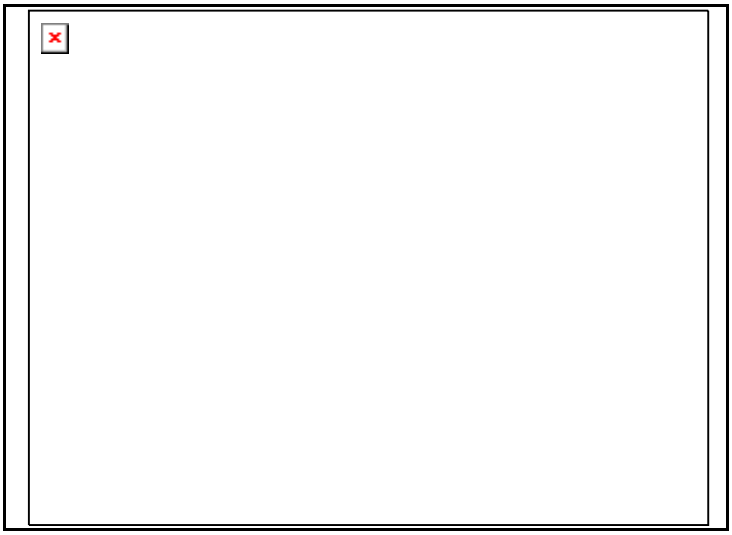
Remove both front bows and wrap the front of the fabric around inside the channel, leaving a couple of inches hanging at the sides. Trim the excess front fabric and glue the material into the inner surface. See above.

With the top installed, tape down the edges of the front bows securely.

Attach the latch "hooks" to the windshield frame using the hardware provided. See the diagram below. Determine where the latches must be installed on the front channel to provide proper tension on the front channel when installed with foam rubber between the channel and top frame. Mark the holes for the latches on the fabric of the front channel, then remove the channels from the car to drill the holes for the rivets. Rivet the latches to the front channel. Remove the remainder of the mandrel from the rivets, and peen the backside of the rivet as flat as possible.

Glue the extra flap of material on the top over the exposed rivets on the backside of the front channel.

Glue $^{1}/_{8}$" thick foam strips to the inside of the front bow channels to seal the top of the windshield frame.



E\topfit3

REMOVE AND REPLACE

(After fitting)

***Cold** temperatures make top installation difficult.*

Install the top bows with the hinged frame toward the rear. See above.

Lay the top in position across the top bows. Install the header channels on the windshield by engaging the header tang into the slot in the top of the windshield.

Engage the outside windshield clamps to the header, but don't cinch them down.

Working toward the center from each side, press the lift-a-dot fasteners onto the body studs. It helps to rock the fastener back and forth a bit.

When all lift-a-dots are secure, cinch down the windshield clamps and adjust the height of the bows at the sides.

If the top is too loose, unscrew the knurled ends of the top bows to raise everything.

Remove in the reverse order.

SIDE CURTAINS

If your top has not already been fit, the windshield angle may be matched to fit the front edge of the side curtain. Once the windshield angle has been determined, the top may installed to fit. If you intend to install side curtains in the future, E.R.A. can supply a **template** to duplicate the correct angle, or use an angle gage to set the **glass angle at the center of the windshield** to 43 degrees above horizontal – assuming the car is level of course.

If the top has been fit, the windshield angle may effect the fit of the side curtain front glazing. The front edge of the curtain may have to be trimmed. See below.

The door must be open wide to install the side curtain pins into the door ferrules. Trial fit each curtain to the door.

If the pins do not match the sockets, it may be necessary to "tweak" the pins or elongate the fiberglass holes in the door so that the body ferrules can shift slightly:

If the pins are not parallel to each other, bend them with pliers, etc.

If bending the pins doesn't solve the problem:
Remove the center ferrule by removing the circlips. This will make checking fit of the outside pins easier. (The center pin can be fit afterward.)
Use a round file to elongate the holes in the door skin and inner panel as needed. Don't make the holes uniformly larger in diameter. Oval them in-line with the other pins, so that the curtain frame will not rock. Once all the pins fit in the outside ferrules, repeat the process for the center one. Replace the circlips.
Install each side curtain on the door and close the door carefully. If the side tilt of the curtain does not match the side of the windshield frame, carefully bend the curtain in or out as necessary.

TRIMMING THE FRONT EDGE:

The top corner of the Plexiglas may have to be matched to the windshield frame. Peal the fabric back from the frame as necessary and trim the sides with a hacksaw. (To prevent scratching, mask off the Plexiglas.) Saw the excess material from the top edge of the frame and bend down to match the sides.

The Plexiglas can be shaped to match with a bandsaw or with careful grinding. Finish with a sanding block and wet 180 or 220 grit paper.

Trim and re-glue the fabric to the frame.

FITTING THE TONNEAU COVER

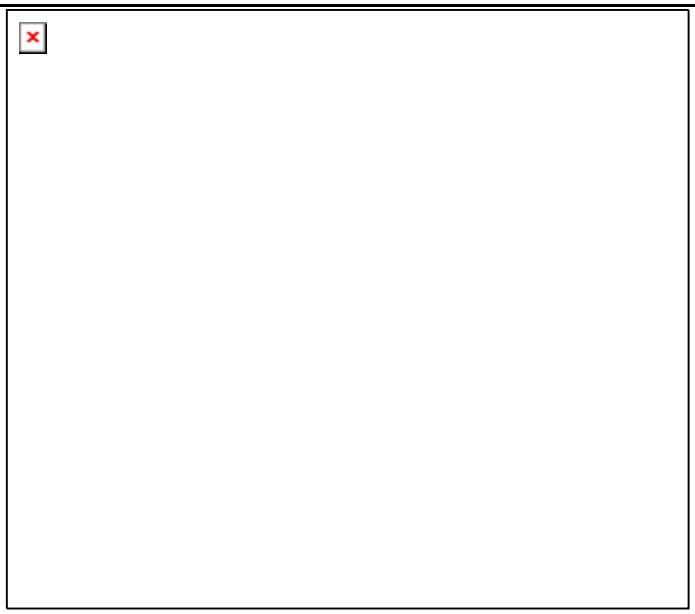
Stretch the cover over the snaps. Starting in the middle snap in the front, mark and install the snaps as described above for the top.

SECTION H:
FINAL OPERATIONS

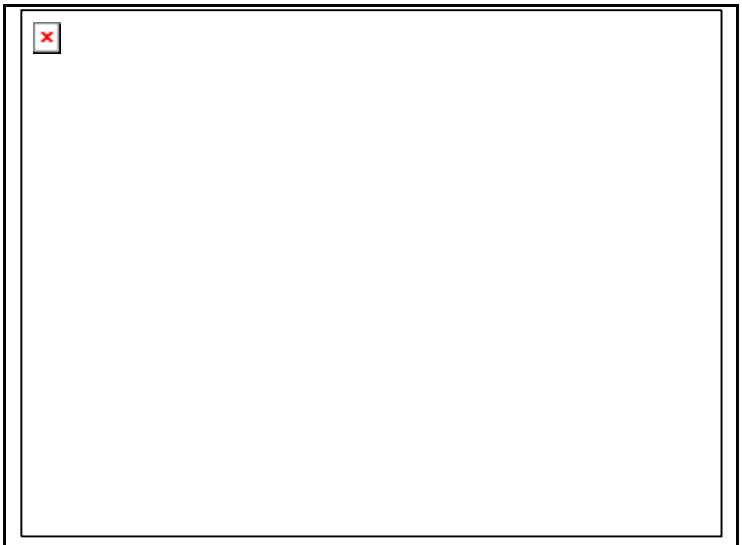
CLUTCH HYDRAULICS

PRESSURE HOSE INSTALLATION

See page 35 for an illustration of the slave cylinder.



With BMW Master Cylinder



With Tilton Master Cylinder

Check the tightness of all fittings before bleeding.

BLEEDING

The car must be level or with the front end slightly higher for this operation

Fill the brake/clutch reservoir with DOT 3 or DOT 4 fluid. Silicone fluid is not recommended.

Attach a small hose to the slave cylinder bleeder nipple, emersing the other end of the hose in a small cup of fluid. Loosen the nipple about $^{2}/_{3}$ turn with a $^{9}/_{32}$" or 7 mm wrench.

Work the arm on the clutch pedal shaft (instead of pushing on the clutch pedal itself) until only clear fluid comes out of the hose.

Close the bleeder nipple and pump the clutch pedal several times. If there is more than 1" travel at the pedal before resistance is felt, repeat the bleeding procedure.

ADJUSTMENT

The slave cylinder has an internal spring that keeps a small amount of pressure to extend the piston at all times. Most throw-out bearings will operate with the small constant pressure involved. Those that cannotmust use a return spring and be adjusted periodically.

If you wish, you can use this preload to automatically keep the clutch adjustment at "zero" clearance. This will, however reduce the life of the throwout bearing. Since clutch wear will be most seen when the driven disc is being broken in, you may want to keep the "automatic mode" during the first couple hundred miles and then install a return spring.

See page 104 for clutch pedal height adjustment.

WITHOUT RETURN SPRING

Increase the length of the throw rod by unscrewing the ball end, forcing the piston in the cylinder to just bottom out. **Note** that the cylinder is spring loaded to the fully extended position.

Decrease the length of the adusting rod so that there is about $^{1}/_{4}$" movement when you push the transmission arm toward the front of the car.

f\cltchadj

WITH SPRING

Remove the spring. Adjust as above, but leave just $^{1}/_{16}$" clearance. This should result in about $^{1}/_{2}$" free play at the pedal. Lack of free play will result in premature throw-out bearing failure or a slipping clutch. The free play must be adjusted after the first 500 miles and about every 6000 miles thereafter.

If the stroke of the arm is at least ¾" and the clutch still seems to be dragging, the disk may be sticking to the flywheel or pressure plate. Try turning the engine over with the clutch depressed and the car in 4th gear (taking care not to crash into the garage wall…). The process may disengage the "stick".

BRAKE HYDRAULICS

BLEEDING

Have the car level or with the rear higher than the front.

- The brake hydraulic system is bled like the clutch except that there is a bleeder (or two) at each wheel. Check the fluid reservoir level periodically. If you run the reservoir and master cylinder dry, you will have to start over.
- Add fluid level to the reservoir if necessary.
- Bleed air consecutively, starting at the right rear and right front, then left rear and left front.
  The optional **Sierra/Wilwood calipers** have a bleeder on both the inside and outside caliper half. Bleed the inside half first, then the outside within the sequence above.
  If you use the hose and jar method, you can bleed the brakes without assistance as long as the end of the hose remains immersed in fluid.

BEDDING IN THE PADS

The pads react positively to a hard initial break-in. Bring the car up to approximately 60 mph, put the transmission in neutral, and bring the car almost to a stop. Do this several times in sucession to heat the pads up. Allow the pads to cool slowly.

PERIODIC FLUSHING

The most compatible fluids are Castrol LMA and ATE type 400. Both are DOT 3 or 4. Don't use DOT 5 - it's silicone-based and may create problems with seals. You will need about a pint of fluid total.

Since the front and rear brakes are separate systems, it doesn't matter which you do first. While you can use a vacuum bleeder, it's not necessary.

- Open the right front bleeder and pump the brake pedal (slowly) until the reservoir is <u>almost</u> dry or the fluid runs clear. With Sierra/Wilwood calipers, flush the inner half, then the outer. Always leave enough fluid in the reservoir to cover the bottom ports.
- Top off the reservoir.
- Do the same process with the left front caliper.
- Repeat the sequence with the rear calipers, doing the right one first, then the left.
- The feed for the clutch is midway up the reservoir. Don't let the level fall below the feed hole when you flush the clutch fluid. Have someone depress the clutch while you open the bleeder. Close the bleeder before they release the pedal. Repeat until the fluid is fresh.

BOLT-ON WHEEL NOTES

The standard thread of the front (GM) lug nuts is $^{7}/_{16}$"-20. The rear (Jaguar) studs are $^{1}/_{2}$"-20 thread size. If you have a space-saver spare, be sure to have lug nuts sized for both.

PIN DRIVE WHEEL NOTES

Some pin-drive wheel castings have been porous, especially with the real magnesium wheels. We recommend that the rim be sealed with epoxy paint from bead to bead inside the tire area. Some tire dealers have a special wheel sealant.

Wing nuts on the left (passenger's side) of the car are right hand thread. Clockwise rotation tightens the wing nut, counter-clockwise loosens.

On the right side (passenger's side) the wing nuts are left hand thread and clockwise rotation loosens the wing nut, counter-clockwise tightens.

Remember: Left side – right hand thread, right side – left hand thread.

Tighten wing nuts in the direction <u>opposite</u> to forward wheel rotation.

*Use **anti-seize** on the knock-off threads, drive pins, wheel mounting surface and the area contacting the wing nut to prevent long-term seizing of the wheel to the hub.*

When installing the wheel on the hub, make sure the pins line up with the holes. Use a plastic dead-blow or lead hammer (3 lbs) to tighten each wing-nut. <u>Don't over-tighten</u>. Strike only until the nut stops rotating..

For backup, drill a hole in each wing of the knock-off and use safety wire to secure one wing to a spoke in the wheel (so that it is always being tightened, of course.)

INSTALL WIPER ARMS

Without the arms installed, cycle the motor through high and low speed. When you turn off the switch, check to see that the drive posts return to the far right (passenger's side) position.

Press the arm onto the post so that the blade falls at the base of the windshield, just above the frame. See above.

Check the sweep of the wiper and adjust if necessary.

Removal:

Use a screwdriver to pry between the post base and the edge of the arm, opposite to the blade.

SUSPENSION ADJUSTMENTS

CHASSIS HEIGHT

After setting the springs as described on page 53, the car should be driven to settle everything in. Don't change the spring heights before driving the car at least 50 miles.

COIL-OVER ADJUSTMENT

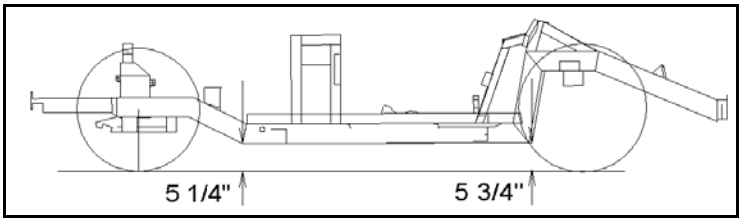
Front: When you raise both sides of the coil spring collar by X (thereby compressing the spring more), the chassis height will change by roughly 1.4 x X. In other words, to raise the ride height by 1", move the spring collar up by 0.7".

Rear (with Jag): For small changes, you can adjust only one spring per side. The ride height will change roughly ½ the collar change. For larger changes, change all four of the collar positions equally. The ride height will then change roughly equal to the collar height change.

FRONT

The specifications for the standard front spring preload are on page 53. This will result in about 7-½" from the ground to the bottom of the front crossmember (5 ¼" to the front of the main rails). The specifications shown below are predicated on the standard tire sizes: 235-60 and 295-50-15. You may change the front height to suit personal taste but be aware that the **oil cooler scoop** will be the first to contact pavement if the car is too low.

Once the height is correct, tighten the front upper control arm pivot bolts. See page 96.



f\ch_hite

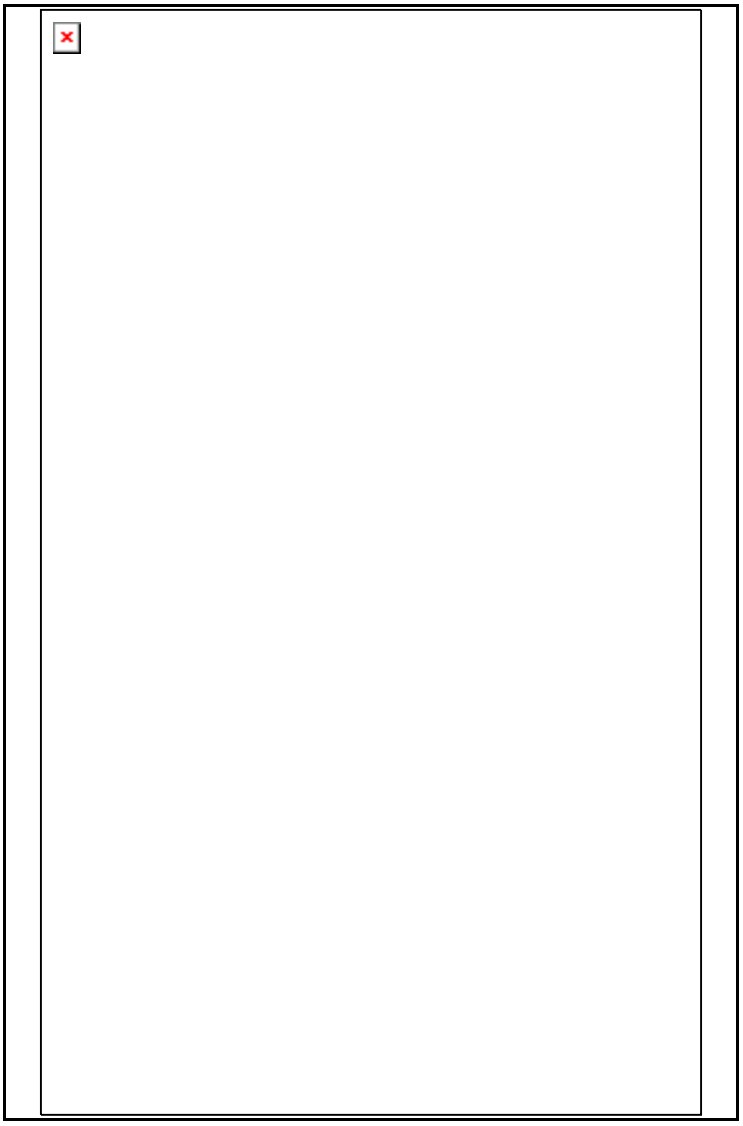
REAR

If you have adjustable spring collar shocks, the rear height can be adjusted to taste. E.R.A. recommends that the main chassis rails be raked about ¼" to ½" from front to back.

ALIGNMENT

*Specifications below are for **street driving**. Competition settings will differ.*

*See pages 96 for suspension assembly. The **chassis height** should be within the specifications given on page 139.*



f\camber

FRONT

Camber **0 deg. +/- 1/4**

- Adding a 1/8" shim at each bracket bolt will increase camber by approximately 1/2 deg. Use standard 1975 Chevrolet Camaro shims or their equivalent.
- All ball joints, outer tie-rod ends and wheel bearings are Chevrolet. The upper control arm pivot shaft is an aftermarket part for the same application, but is offset for more camber adjustment. Replacement part numbers are on page 148.

Caster4 1/2 deg. +/- 1/2

- The caster value of the left and right sides of the car should differ by less than 1/2 deg., and the **right caster** should always be equal or greater than the left to compensate for road crown.
- Shifting a 1/8" shim from the front of the bracket to the rear will decrease the caster by about 1 1/4 deg.

Toe-in: **1/16"-1/8" (0.1-0.2 deg/side)**

- Loosen the jam nut on each tie rod. Rotate the inner tie rod inside the rack boot to adjust. Each turn of the tie rod relative to the end will change the toe by about 3/16". With the **ERA steering gear**, equalize the distance between the tie rod center and the end of the inner sleeve.
- Once the toe is correct, remove the steering wheel/hub from the splines and re-install so that is centered. Temporarily install the large washer, wave washer and nut, torquing to 10 lb-ft. Final adjustment of the wheel can be done after the car is test-driven. When the steering wheel orientation is correct, tighten the column hub nut to 25 lb-ft. Install the hub center cap as described on page 113.

REAR (JAGUAR)

Camber **-3/4 deg. +/- 1/4**

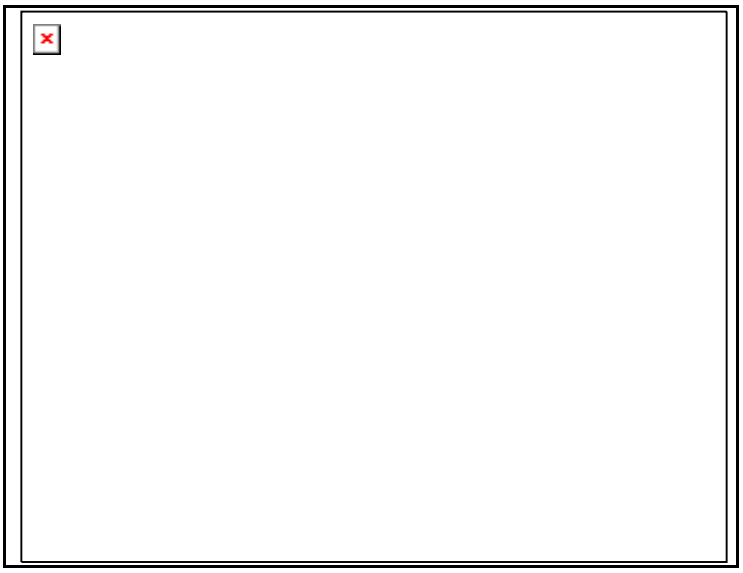
Toe-in 0.0" +/-1/16"

- Adjust **Camber** by adding or removing shims from between the brake rotor and the inner drive-axle flange. A 0.020" shim will change camber by ¼ degree. Most setups will require only one shim, less than is normally used in the original car so you will have extra ones left over. New shims are available from us, your local Jaguar dealer, or Special Interest Car Parts.
- The rear wheel toe-in is not individually adjustable. If the toe is out of range, the lower control arms must be bent or replaced. Tracking (longitudinal alignment of the front and rear suspensions) may be changed by adjusting the length of the trailing arms at the rod end to shift the assembly in the chassis.

REAR (ERA)

Camber: -3/4 deg. +/- 1/4 deg.

Toe-in: 0-1/16" (0-1/4 deg.)



Procedure:

- Set the trailing arm lengths as described on page 101.
- Set the height as described on page 139.
- Use the rear tie rod to bring the toe-in into spec, but don't tighten the jam nuts. The threads on the outer section of the tie rod are right hand, the threads into the inner rod end are left hand – so turning the adjuster forward at the top will decrease toe-in. For each complete turn of the tie rod, toe will change by 0.2" (.75 deg.). Turning the tie-rod 1/6 of a turn (one flat on the adjuster) will change the toe-in by 1/32" (1/8 deg.).
- Measure the camber.
- To change the camber, the front rod end must be disengaged from the inner bracket. Jack the car up to unload the suspension and remove the inner pivot bolt. For each ¼ degree of camber change needed, turn the rod end ½ turn in or out. Re-insert the inner pivot bolt and tighten to 75 lbft. Change the length of the rear tie rod the same amount by turning in or out ½ the number of turns that the rod end was changed by: i.e. you rotated the rod end by ½ turn, rotate the tie-rod by ¼ turn. Too much negative camber can also be changed by adding shims between the inner axle flange and the spacer. A 0.02" shim will change camber by ¼ degrees.

ANTI-SWAY BAR ADJUSTMENT

If you have the **ERA outboard-braked rear suspension**, the effective stiffness of the rear anti-roll bar can be changed to effect the front/rear balance. Slide the adjuster (see page 102) toward the front for more understeer/less oversteer.

DAMPER ADJUSTMENT

SPAX

Spax dampers do not have separate bump and rebound controls, but a reasonable performance compromise can be made using common sense and a screwdriver. The bump/rebound ratio is designed for the ERA 427SC and only detail changes need be made for optimum handling. We have found that all dampers adjusted 5 clicks from dead soft (see below) is reasonable for the street. Damping adjustment is located near the bottom of each unit at the slotted pin. Rotate the adjustment counter-clockwise until you can no longer feel the adjustment "clicks." This is "dead soft." If you wish to experiment with your own settings, read the instructions below.

Custom Settings: Initially set all front and rear dampers 2 clockwise clicks from dead soft. Drive the car over uneven surfaces to determine whether the car bounces over bumps or wheel control is properly maintained. Increase the damping until side hopping begins, then decrease the setting until control is regained. Read the instructions below for Koni rebound damping adjustments for transition understeer/oversteer adjustment.

KONI (RACING, EXTERNALLY ADJUSTABLE)

Bump control: The control knob is located at the bottom of the damper. Turning the wheel clockwise increases the bump control damping. Set all four dampers on minimum bump and rebound settings. Drive to get the feel of the car over uneven surfaces. Observe the behavior over bumps, disregarding body roll. Notice if the car walks or side-hops in a rough turn. Increase bump adjustment 3 clicks on all four dampers.

Drive the car again over uneven surfaces. Increase the adjustments until the car starts to feel hard over bumps. Back off the adjustment 2 clicks. The back off point will probably be reached sooner on one end of the vehicle than the other. If this occurs, keep increasing the bump adjustment on the soft end until it, too, feels hard. Then back it off. Final adjustment can be made after you get used to the feel of the car.

Rebound control: The adjustment is made by inserting a pin in the wheel at the top of the damper. Turning the toothed control wheel from left to right will increase the rebound damping. With rebound control set on full soft and the bump control set from your testing, drive the car, paying attention to how the car rolls when entering a turn. Increase the rebound damping three sweeps on all four dampers and test drive the car. Continue increasing the damper setting until the car enters the turns smoothly, with no drastic attitude changes, and without leaning excessively. Any increase beyond this point is unnecessary and may in fact be detrimental.

Final adjustments can be made to effect the "turn-in" of the car. That is, whether the car has initial understeer or oversteer. By increasing the rebound control at one end it will decrease the initial adhesion at that end. Conversely, decreasing the rebound control increases the initial adhesion. In general, neutral or slight initial understeer is most desirable. There should not be a large difference between transient and final balance, although slightly less initial understeer will increase responsiveness.

TIRE PRESSURES

Use initial settings (cold) of 28psi front, 26psi rear. Depending upon tire brand and size, these pressures will be a reasonable compromise between ride and responsiveness. Remember, this a light car with large tires. High tire pressures are not necessary or desirable except for high speed/competition. Harshness and vibration become a serious factor at higher pressures. If you are using 17" wheels with very low profile tires check the manufacturer's recommendations.

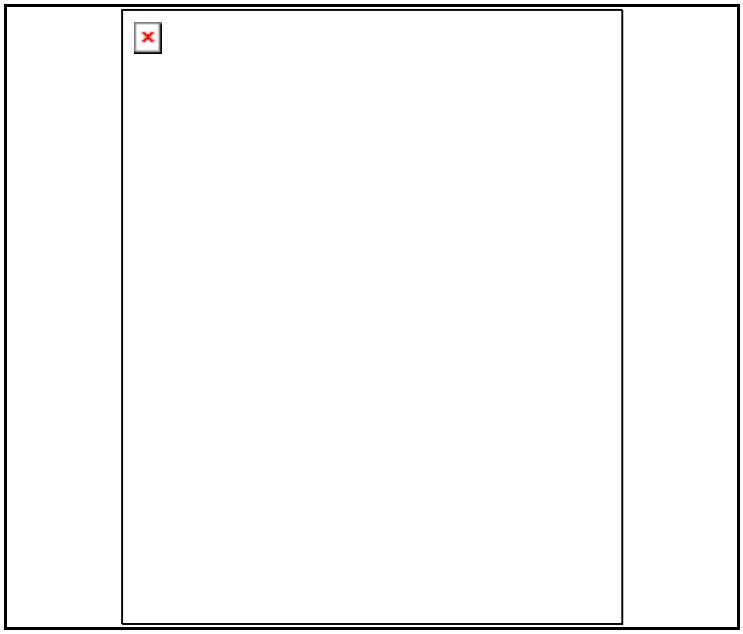
Steady state under/oversteer may be adjusted significantly by working with the tire pressures. If your balance is incorrect, raise the pressures on the axle your want to stick better by about 2 psi and road test the car. You may, alternately, reduce the pressures on the opposite axle for a better ride. Generally, it is the difference in front and rear tire pressure that determines handling balance. If the car does not behave the same cornering right and left, check that the anti-sway bar links are not preloaded, and that the spring preload follows the preload specifications on page 53.

BRAKE BALANCE ADJUSTMENT

Do not change *the brake bias until after the brakes have been thoroughly bedded in. The factor- set bias will be fine for most applications. Changes may be necessary because of strange pad material and/or different calipers, but* none of the available E.R.A. options require major changes.

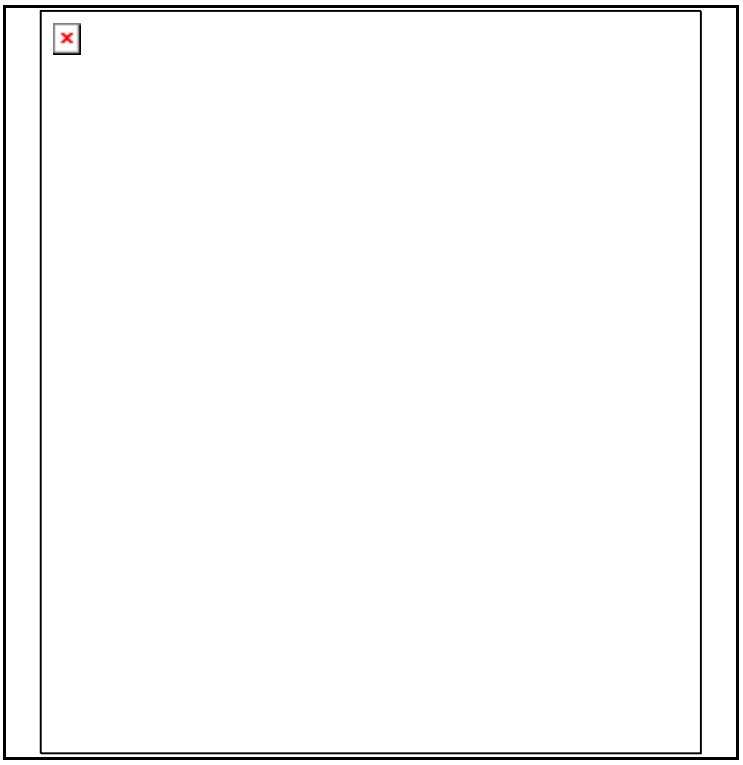
First, ***check*** *that your* ***link length*** *is correct.* *See page 103.*

Note that the brake balance bar must be set up on an angle as shown below. This is required because the front calipers require about three times the brake fluid volume as the rear.



Generally, on a road with good traction, **the front brakes should lock slightly before the rears**.

Front-to-rear bias is adjusted by changing the spacers on either side of the brake pedal lower balance bar bearing. Retain the **total** number of the spacers, shifting them from one side of the balance bar to the other. Standard spacing is an equal number of washers on either side of the balance bearing. If you have special calipers and require more change than is available at the balance bar, new master cylinders are available in diameters from $^{5}/_{8}$" to 1".



f\brkbal

ADD FLUIDS

Top up the proper oils or fluids to the engine, transmission, rear end, cooling system, and braking system

Engine oil: If the engine has never been run, add oil to the filter and oil cooler before starting. Build up oil pressure by cranking the engine over with the spark plugs removed. Alternately, you may use a drill on an extra long distributor drive shaft to turn the oil pump. Once the pressure is up, you may need to add more oil.

See page 149 for Capacities.

COOLING SYSTEM

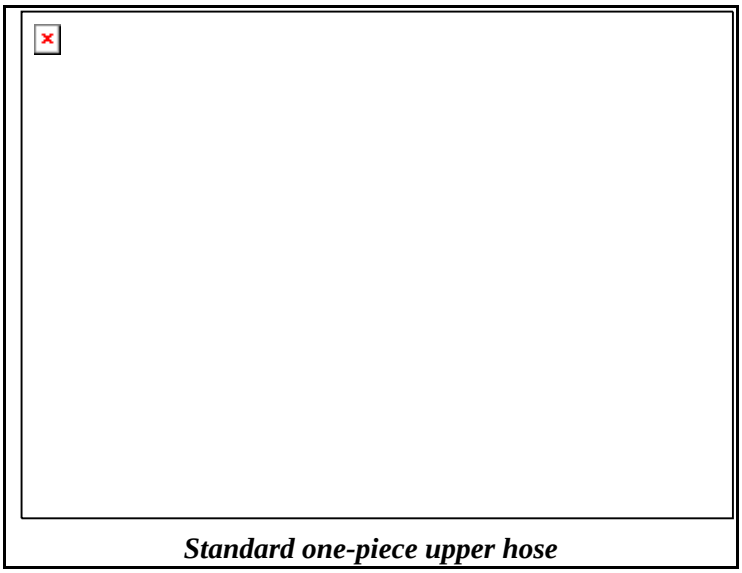
WATER HOSE LAYOUT (FE)

Install the radiator hoses (and optional top tube connector) and lower hose connector. The hose part numbers and instructions for modifying the front lower hose are covered on page 39.

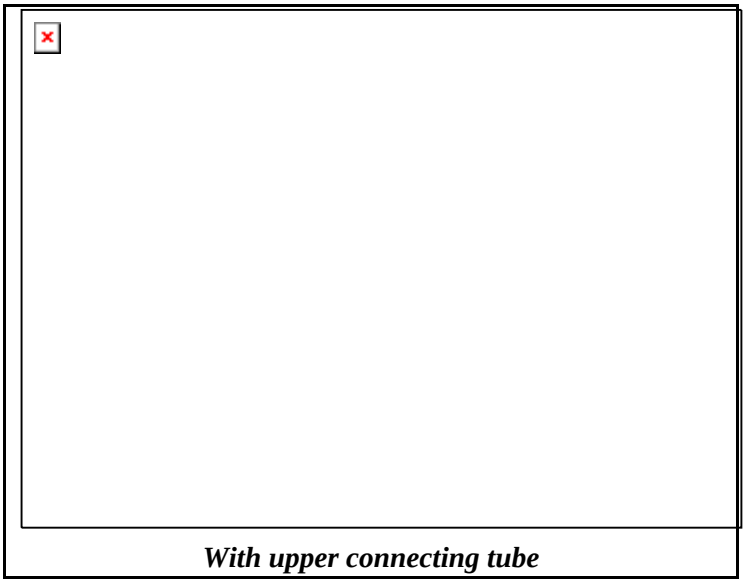
The radiator cooling fan thermostatic switch is in the lower hose connector. Connect the harness wires as shown on page 81 and detailed in the wiring instructions. (There is also an over-ride switch on the dashboard).

See the diagrams below for the cooling system circuits.

Do NOT remove the spring from inside the long lower hose. It prevents the hose from collapsing at speed.



Standard one-piece upper hose



With upper connecting tube

SETUP

The optimal operating temperature for most FE engines is about 185F (85C). This will keep water condensation in the oil to a minimum and allow adequate oil flow. We do not recommend using a restrictor plate in place of a thermostat unless the car is used exclusively for track use.

See page 150 for your best mix of water and anti-freeze. With a 15psi pressure cap, the boiling point will be raised to about 240°F.

Fill the system through the expansion tank, leaving about 1½" of expansion space above the coolant level.

With some engines (especially the FE Ford), air tends to be trapped in the intake manifold and cylinder heads. ***To remove the trapped air:***

- Drill the thermostat as shown on page 38.
- **Open** the bleeder at the upper right of the radiator. **Fill** the system with the cooling mixture. Once water flows bubble free from the radiator bleeder, shut the valve. Actually, we usually fill the system with water first and pressure test for leaks, then drain half the water out. We can also tell the condition of the cleanliness of the cooling system by the drain water.
- With the expansion tank full, **loosen** the water temperature fitting on the intake manifold. Air will be expelled. When nothing comes out but fluid, tighten the fitting. If you have a **heater**, it may be necessary to bleed air from the system by disconnecting a hose at the heater nipple.
- **Repeat** the bleeding process after the car is run. More air will usually come out.
- Check the hoses and **retighten** all the hose clamps.

OVERHEATING:

Use a 165°F -180°F thermostat for street use. Leaving the thermostat out will cause overheating. The boiling point of a water/anti-freeze mixture with a 15 psi cap is ***over 230°F****. It is not harmful (and normal) for the water temperature to rise to 210°F - 220°F with the car not moving.*

We do ***NOT*** *recommend using an underdrive waterpump pulley on the street..*

AT SPEED

The E.R.A. 427SC uses an oversized radiator made by Griffin, rated for 600 bhp. Overheating at speed is almost always the result of incorrect engine settings, usually retarded ignition timing. Check your dynamic timing at idle and 3000-3500rpm, or as recommended by your engine builder. Sometimes an extremely tight (new) engine can cause overheating.

AT LOW SPEEDS

Our standard fan is adequate for practically any small block engine under normal conditions – and OK for mild FE engines under 90°F-ambient conditions. If you expect high temperature city driving, or you have a large displacement and/or highly tweaked engine, consider ordering our heavy-duty fan. Alternately, the effectiveness of the heavy-duty fan is approximated by the combination of the standard rear fan plus the optional dual front fans. See page 89.

*The fan only effects water temperature when the car is **below 15mph**.*

Test the fan function:

The fan thermo-switch is in the aluminum connector between the radiator and water pump. Because the sensor is in the coolant return line, the 75° C switch marking will not correspond to the cylinder head temperature that the gage indicates because of the cooling that occurs in the radiator.

After starting and running the car up to operating temperature (180°F min.), use the dash (manual over-ride) switch to manually turn the radiator fan on. The temperature should stabilize somewhat under 210°F, depending on your ambient temperature. Shut the over-ride switch off and allow the fan to come on automatically. This should happen about 200°F -210°F. If the fan does not start, even at 220°F, check the electrical circuits involved.

Once the temperature drops, the fan will automatically cycle off. ***The fan will run** even with the ignition off*, but will normally stop within 5 minutes. This feature helps prevent "hot soak" fuel percolation in the carburetor.

- Check for exhaust leaks.
- Re-torque the exhaust manifold bolts.
- Check the hand brake. This disk brake system may require more effort than your "other" car.

HEADLIGHT ADJUSTMENT

Most service stations have a standard set of headlight adjusters. If you have a flat area (at least 40 ft long) you can do the job yourself.

- Remove the screw at the bottom of the trim ring, and pry off the ring with a flat screwdriver.
- Change the vertical/horizontal orientation with the adjusting screws at the top and side of the headlight retaining ring. See the diagram below.
- Replace the trim ring and screw.

***CONGRATULATIONS*!** You have just assembled a complete automobile from the ground up! Your E.R.A. will give you the exhilaration and uniqueness of an outstanding, high performance automobile. Enjoy!

See page 152 for hints on inspection, insurance and registration.

DRIVING/CONTROLS

The dash switches are arranged as follows. All the toggle switches are oriented with off down.
Note that the **fresh air** is **on** when the dash knobs are pushed **in**.

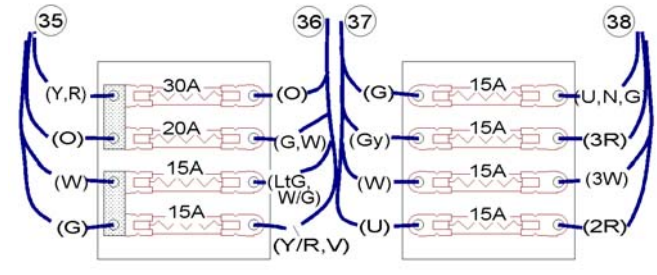
If you have a heater, the positions of the oil temperature gage and ammeter may differ from the diagram below.

Warning lights: Blue (U)=High beam **Green (G)=Signal** **Red (R)=Ignition/Alternator**

FUSES

1. Radiator fan, heater
2. Horns
3. Wipers, Heater
4. Voltage regulator, Fan relay, Signal lights
5. Brake, backup lights, Fuel pump
6. Parking, panel lights
7. Headlights, high beams
8. Headlights, low beams

There are also two fast-blow 4A fuses under the steering column that protect the rear signal/brake lights individually.



FUSE BLOCKS (VIEWED FROM FRONT)

RECOMMENDED PERIODIC SERVICE

Fluids and capacities are listed on page 143.

EVERY GASOLINE FILL-UP:

- Check engine oil and water

FIRST 1000 MILES

- Check the tightness on all chassis bolts
- Change engine oil and filter

EVERY 3000 MILES

- Change engine oil and filter
- Check engine drive belts for wear and tension
- Adjust clutch play (if using a return spring)
- Grease the lower spherical joint of the front shock

EVERY 6000 MILES

- Inspect front brakes

EVERY 12,000 MILES

- Check transmission oil
- Grease rear axle and driveshaft universal joints
- Grease the inner and outer pivots on the rear lower control arm (Jaguar only)
- Grease front upper and lower ball joints and outer tie rod ends

EVERY 24 MONTHS OR 2 YEARS

- Change antifreeze
- Check rear brakes

EVERY 3 YEARS

- Flush and replace brake fluid. See page 138.

STARTING A CARBURETOR CAR

Most of our preferred engine builders use a carburetor without a built in choke. This is for simplicity and to increase power. Starting the car when cold requires a litte different procedure than most (even the old-timers) are used to.

Cold start: Pump the accelerator pedal two or three times. Take your foot off the pedal while you crank. When the car starts, feather the accelerator pedal.

Hot start: Crack open the throttle pedal just a bit while you crank. If the car doesn't start, pump once and open the throttle half way.

MAINTENANCE/PARTS

All pieces listed below are included in the kit but are listed here for reference and long term replacement.

Part numbers listed are typical, but equivalent brands may be substituted unless otherwise stated. Fluids and capacities are listed on page 143.

BRAKES

FRONT	Caliper	Pads	Rotor thickness, max/min
GM caliper	1975 Camaro	Bendix D52S	1.040"-0.970"
Sierra caliper (XL)	002-0114 LH 002-0114 RH	Various. Must fit Wilwood Superlite, .8" thick pad.	1.250"-1.190"
REAR			
Jaguar	(1980 XJ-6)	Lucas/Girling GP97	0.500"-0.470"
ERA Rear	'93-'97 GM "F body"	Bendix MKD750, MRD750, PMD750	0.810"-0.770"

HYDRAULICS

Brake master cylinder front	Tilton 74-875U
rear	Tilton 74-750U
Clutch master cyl. (Fits 72-76 2002)	BMW 2152 1104 510 or Tilton 74-875U
Line, Flex front	EIS SP5753 (mod'fd)
Rear (chas to subframe)	EIS SP1358 or Bendix 88264
Brake pad, front	Bendix D52S
Bearing, shaft /clutch pedal:	Tor. B1416
Thrust washer	Tor. TRA1423
Bearing, balance bar	Heim LSS-8
Clutch slave cylinder: (Fits 72-76 2002)	BMW 21521104269

SUSPENSION, FRONT:

Ball joint, lower:	Moog 6145, Rep. 10277
Ball joint, upper:	Moog 5208, Rep. 10268
Bushing, lower, inner pivot	TCI 9952 (ERA)
Tie rod end, outer:	Republic ES 425R Moog ES425RL
Tie rod end, inner:	E.R.A. part
Sway bar, link:	Republic SL18060
Bushing and bracket	Suspension Techniques PB-93
Bearing, F hub inner	A-2 Bower/BCA
outer	A-6 Bower/BCA
Seal, inner, F hub	National 8871
Bushing, upper, inner pivot:	TRW 12310
Upper control arm shaft w/bushes	MOOG K6148
Bushings only	MOOG K6108
Steering gear	Flaming River FR1502 3X3

SUSPENSION, JAGUAR REAR:

Inner pivot bearing, lower wishbone	Tor. B146
Outer fulcrum bearing, lower wishbone	Timken 03062/03162
Seal, inner fulcrum	Jaguar C17168
Seal, outer fulcrum	National 471652
Bearing, inner hub	Timken 18520/18590
Bearing, outer hub	Timken 18620/18690
Hub seal, inner	Beck Arnley 052-0221
Hub seal, outer	BeckArnley 052-0643 (large)
Sway bar link	Republic SL18050
clamp and bushing	Suspension Techniques PA-75
Universal joint	Spicer 5-160X
Subframe pivot bush	Moog K8169 or Republic 12292
Pinion seal (most)	AAU3381A
Door hinge bushing	Boston FB58-5

SUSPENSION, REAR, OUTBOARD BRAKES

Outer fulcrum bearing, lower wishbone	Timken 03062/03162
Upper trailing arm, Frnt	HMR-8
Rear	HML-8
Upper radius rod, inner	HMR-8
Upper rad. rod, outer	HML-8
Lower rad. rod, Rr in'r	HFR-8
Lower rad. rods, out'r	Energy Susp. 9-9105
Lower rad. rod, F in'r	HMR-8
Lower trailing arm, F	Energy Susp. 9-9105
Lower trailing arm, Rr	HMR-8
Subframe, top mt.	Same as Jaguar ⇑
Subframe, bottom mt.	Energy Susp. 9-9107
BEARINGS and SEALS	**All from 1976 Jag XJ**
Bearing, inner hub	Timken 18520/18590
Bearing, outer hub	Timken 18620/18690
Hub seal, inner	Beck Arnley 052-0221
Hub seal, outer	Beck Arnley 052-0643
Sway bar link	Republic SL18050
clamp and bushing	Suspension Techniques PA-75
Universal joint	Spicer 5-160X
Subframe pivot bush	Republic 12292
Pinion seal (most)	AAU3381A or inquire for non-leather replacement

BODY

Bushing, Door hinge	FB58-5 Oilite®

STEERING COLUMN

Bushing, column housing	Lucas 209423

RELAYS, SWITCHES

Relay (Horn and radiator fan)	Bosch 36-081 (0 332 204 150, or 0 332 202 125) or VW 321 919 505
Switch, fan thermo	VW 823 959 431/75
Relay (tail-light)	Standard Ign. TC-52
Switch, Brake light	Ford 100810B, GM 403936, Cole Hersey 8626, Wagner FC5106
ERA Column	
Signal/Dimmer Switch	VW ('66-'67 Bug) 141 953 517F
Dimmer relay	VW 111 941 583 NAPA ECHAR284
E.R.A. and Trumph Flasher	Buss 180

Bulbs

Headlight	6014
Frt signal/parking light	1157
Rr signal/parking light	1157
Instrument lighting	Varies - match bulb
License plate (2 rqd)	57

Fuel system

Filler cap (inner), std	Stant 10810
Filler car (inner), locking (1980 Mustang w/3.3L)	Stant 10582 (Must be vented)

CAPACITIES/LUBRICANTS

Engine Oil

FE engine with Canton pan: 7.5 qts.
w/ oil cooler 8 qts.

Add for remote filter: .5 qt.

Transmission:.

Ford Top Loader: Fill to hole with 80W-90 GL5 gear oil
Richmond Gear 5 speed: 2 US qts of Redline 75-90 NS
Tremec TKO: GM Synchro transmission fluid or Dexron II
Ford T-5: Ford Automatic transmission fluid

Differential: The filler and drain plugs are ½" square. Fill to about ½" below the bottom of the hole with Moroso climbing gear lube, SAE 90, part number 34800, mixed with 4 to 8 oz. of Amalie limited slip additive (part # 505-6775). If the above are not available, you may use 80W-90 GL5 lubricant with an equivalent limited slip additive. If the limited slip seems to be **sticking** (ratcheting around sharp corners), drain and refill, replacing the Amalie additive with 2 tubes of GM additive 1052358.

Suspension: Use an EP-type grease on all pieces with grease nipples. Use a silicone grease when lubing the front lower control arm inner bushes (only necessary when you are replacing them).

Cooling system capacity.

Ford FE engine - 4 gallons
Ford small block - 3.5 gallons

FREEZING POINTS FOR SOLUTIONS OF ETHYLENE GLYCOL

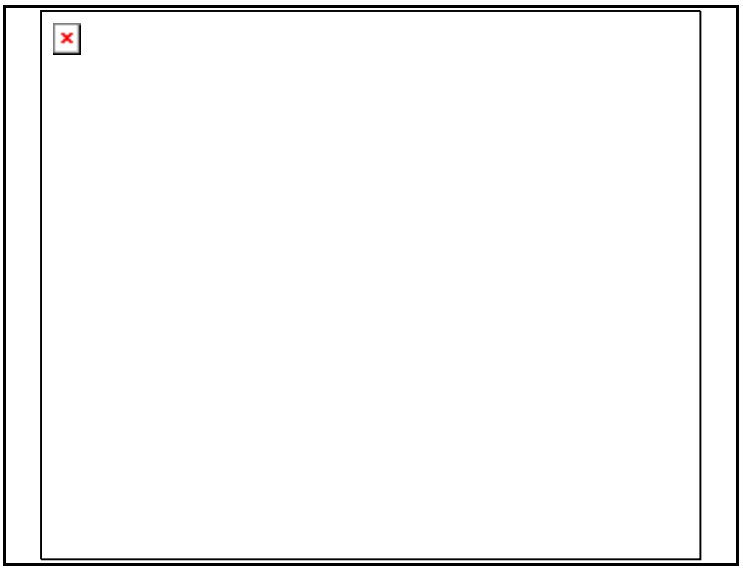
GLYCOL % BY VOLUME	°F	°C
12.5	25	-4
17	20	-7
25	10	-12
32.5	0	-18
38.5	-10	-23
44	-20	-29
49	-30	-34
52.5	-40	-40

For optimum cooling, it's best to use the smallest proportion of anti-freeze commensurate with your local temperatures. Pure water has the best heat transfer rate of all but you must always use coolant or additive that prevents aluminum corrosion. We've had good results by adding **Red Line Water Wetter** too.

JACKING

FRONT

The car can also be jacked up on the lower control arms at the ball joint (be careful not to damage the grease fitting), or the front crossmember as shown. The jack will (barely) fit by going in diagonally just in front of a front wheel, avoiding the oil cooler scoop.

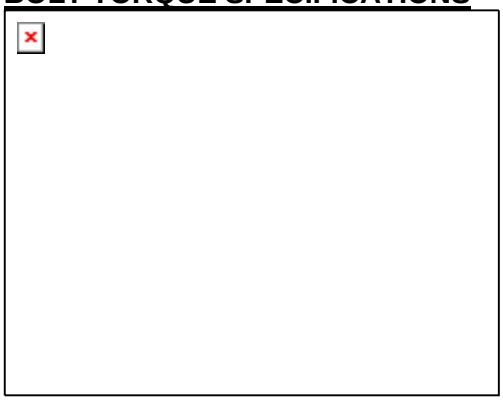


H\fjack

REAR

Jack up by the differential or the crossmember just in front of the differential. The Jaguar suspension can be jacked on the outer end of the control arm or the hub carrier, the ERA suspension, just under the hub carrier.

BOLT TORQUE SPECIFICATIONS



Use figures below only if unspecified in the relevant instructions. Torques listed are for **lubricated** threads or threads with liquid thread locker. All stover nut threads should be lubricated with a light oil.

Metric	**Grade 10.9**	**Grade 12.9**
M8	25 lb.ft.	29 lb.ft.
M10	47	58
M12	83	100

U.S. Bolt size	**Grade 5**	**Grade 8**
1/4"	9 lb.ft.	13 lb.ft.
5/16"	18	28
3/8"	31	46
7/16"	50	75
1/2"	75	115
5/8"	150	225

INSPECTION AND REGISTRATION

Without researching and writing an entire book on the subject, it is impossible to give up-to-date information on the process of inspection and registration in every state. You must call your state Department of Motor Vehicles or its equivalent to get local procedures and restrictions. Most states have a pamphlet outlining the requirements for composite cars.

E.R.A. has compiled comments from several forums at http://www.erareplicas.com/statereg.htm.

All states will require a Certificate of Origin for the kit (supplied by ERA) and reciepts for all major components. Many states will want to install a new State Identification Plate (in addition to the E.R.A. ID plate).

Most states fall into 4 inspection categories:

1. Inspections are done only by central or regional motor vehicle inspection stations.
2. Inspections may be done by a local state inspection station. That is, a branch of the state Motor Vehicle Department.
3. Inspections may be done by authorized (private) inspection stations.
4. No direct inspection is necessary.

Several companies will give you an Alabama registration by mail. *This registration may or may not be valid in your state. Lately, it seem that, many states are not accepting such paperwork and in fact revolking the registration cars previously registered in this manner.*

POSSIBLE PROBLEM AREAS

Exhaust system: Some states require a heat shield over the side pipes. Call us.

Some states will put a local identification plate on your car. If possible, have them put it on the firewall above the driver's footbox.

BE PREPARED!

Check all your systems for proper function.

Don't go to an inspection station ignorant of the local requirements.

Don't expect special favors from motor vehicle inspectors, and treat them with respect. They are just doing their job. If you have a problem, ask the inspector how it might be fixed. They can be very helpful. If you have to return for a follow-up, try to get the same inspector.

Do have everything working, properly adjusted, neat and clean. The better your car looks, the easier it is to pass inspection.

Most states require **thorough documentation** of the origin of your parts. Be sure that you have bills of sale for your engine, transmission, wheels etc. You will get a **Certificate of Origin** for the kit from E.R.A. at the time of delivery.

INSURANCE

Many insurance companies will allow you to add the 427SC to your present policy. If they won't, there are a number of insurance agencies specializing in replicas. Look in issues of Kit Car Illustrated, Specialty Cars and related magazines for the latest offerings. I try to keep an updated listing at http://www.erareplicas.com/427man/insurance/ too. When dealing with an insurance agent, say ***replica***, not kit car. Some of them can't translate.

If you use a specialty insurer, there may be some restrictions to your use and the yearly mileage allowed. The cost, however, is usually quite reasonable. Some insurers will grant you a significant discount if your car has an on-board fire extinguisher in the engine compartment. See the TrueChoice listing on page 27. Call E.R.A. for the latest system specifications.

Below is a short but not necessarily current, list. A list of kit car clubs that may have more local information starts on page 153.

Aidukas Insurance Agency, Palm Springs, CA, Tel. 619-327-3889 (California Only)

American Collector Insurance, Cherry Hill, NJ, Tel. 800-360-2277

Apollo Insurance, Sonoma CA, Tel. 800-624-5829

Automobile Club of Southern California

Cardiff (Insurance), Rich Dunham. Tel. 818-980-8941

Classic Automobile Insurance, Div. Modern Home Ins., Tel. 800-397-0765. 44 states, limited mileage.

Condon and Skelly, Maple Shade, NJ, Tel 800-257-9496 (in NJ , 800-624-4688). Currently 19 states.

Great American Insurance (Classic Collectors program), 800-252-5233

Grundy Insurance, (grundy.com), Horsham, PA, 800-338-4005

Hagerty Classic Auto Insurance, 800-922-4050

Heacock Ins. Grp, Lakeland, FL, Tel. 800-678-5173

Insurance Alternatives Agency, Bridget Scherb, Forked River, NJ. 609-693-3943

J.C. Taylor Modified Auto Ins. Agency, Upper Darby, PA, 215-748-0567, 610-853-1300

John Young, 310-254-7355

K & K Insurance, Fort Wayne, IN, Tel. 800-540-0858

Metro Agency, 313-522-3900

Northeast Classic Auto Insurance(Div. Steeves, Smith & Assoc.), Monroe, CT, Tel. 203-261-8474 ext. 20

Parrish Insurance, Nashville, TN, Tel.800-274-1804 (www.parishheacock.com)

Sneed, Robinson & Gerber, 901-372-4580

State Farm Insurance has been known to insure replicas as a "Classic Car".

The Specialty Constructed Vehicle Association (310-422-1967) offers insurance through Condon and Skelly

TransNational General Insurance, Dallas TX (Dave Gobel). Tel. 214-980-8941

Tri-State Insurance Co., Luverne, MN, Tel. 800-533-0303 (MN 800-722-9365) Mid-west only.

Reference Books	How to Rebuild Ford Engines, Steve Christ, HPBooks-708 Ford Performance, Pat Ganahl, S-A Design Publishing

Accent tubes 113
Air cleaner 74
Air hoses 79
Alignment, suspension 140
Alternator 21
  Mounting
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  Rear 16
Bulkhead, Rear 83
Bumpers 124
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